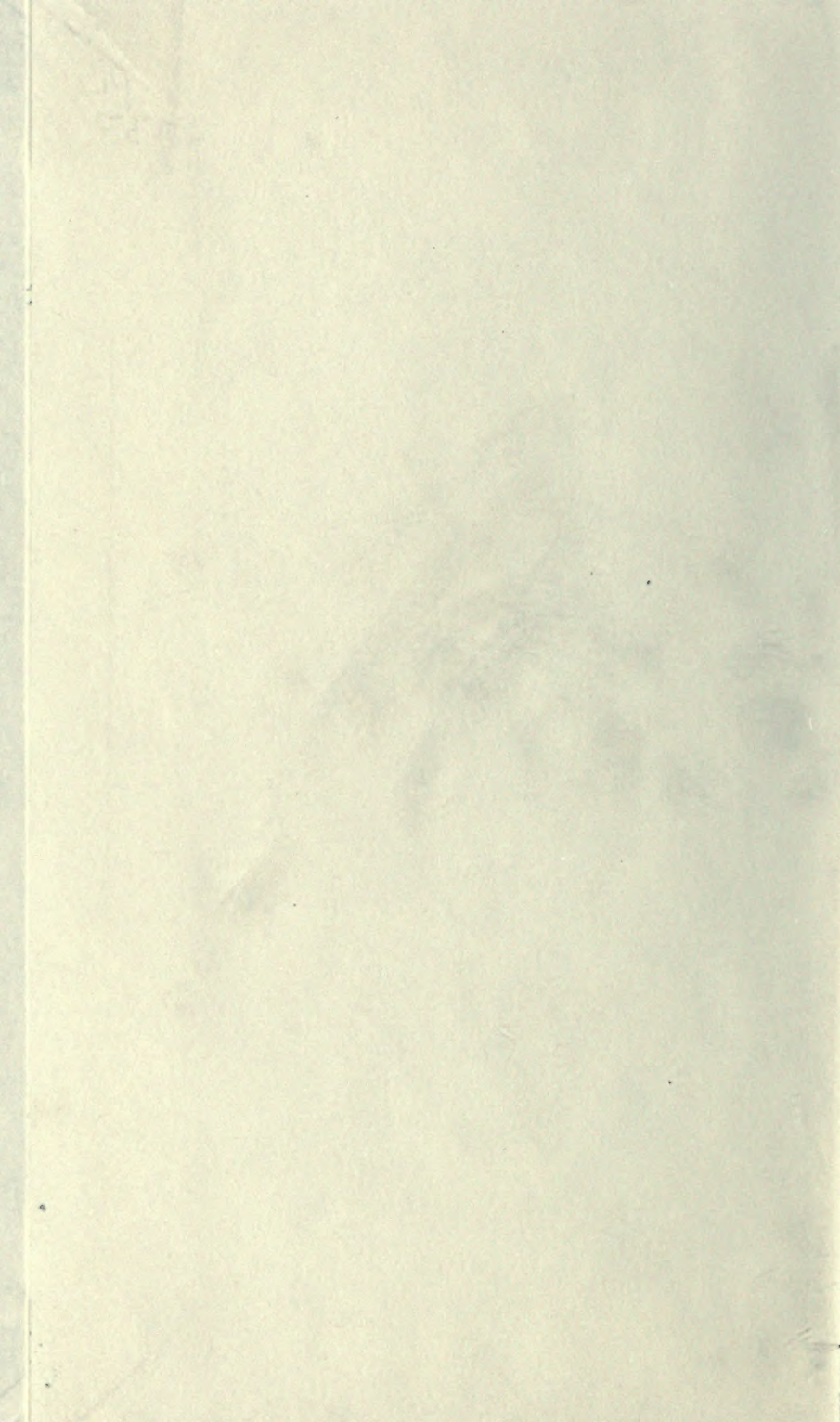


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A GUIDE
TO THE
DOMESTICATED ANIMALS

(OTHER THAN HORSES)

EXHIBITED IN THE CENTRAL AND NORTH HALLS

OF THE

BRITISH MUSEUM (NATURAL HISTORY)

CROMWELL ROAD, LONDON, S.W.

ILLUSTRATED BY 24 FIGURES.

LONDON:

PRINTED BY ORDER OF THE TRUSTEES OF
THE BRITISH MUSEUM.

1908.

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British Museum (Nat. Hist.). Dept. of Zoology



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DOMESTICATED ANIMALS
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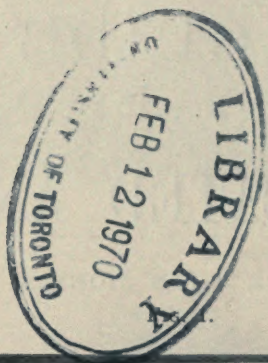
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ANCIENT EGYPTIAN OX.

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PREFACE.

ALTHOUGH there are a few specimens which have been in the Museum for many years, the collection of Domesticated Animals is mainly of quite recent origin. The importance of the study of Domesticated Animals to the scientific naturalist is indicated in the following extract from the works of Professor Ernst Haeckel :—

“ Wild animals and plants, one year after another, appear approximately in the same form, and thus give rise to the mistaken doctrine of the constancy of species ; domesticated animals and plants, on the other hand, display great changes within a few years. The perfection attained by breeders and gardeners in the art of selection enables them to produce entirely new forms in a short time. For this purpose it is only necessary to keep and propagate the animal or plant under special conditions, when, after a few generations, new species may be obtained, differing from the original form in a much higher degree than do many wild species, or even genera, from one another. The importance of this fact cannot be over-estimated in connection with the origin of species.”

The interest of the collection to breeders, fanciers, and the public generally is self-apparent.

The present Guide-book, which has been written by Mr. Lydekker, includes the whole of the collection of Domesticated Animals, other than Horses and Asses ; these latter forming the subject of a separate work.

R. BOWDLER SHARPE,

Assistant Keeper, Department of Vertebrate Zoology.

BRITISH MUSEUM (NATURAL HISTORY),

CROMWELL ROAD, LONDON, S.W.

May, 1908

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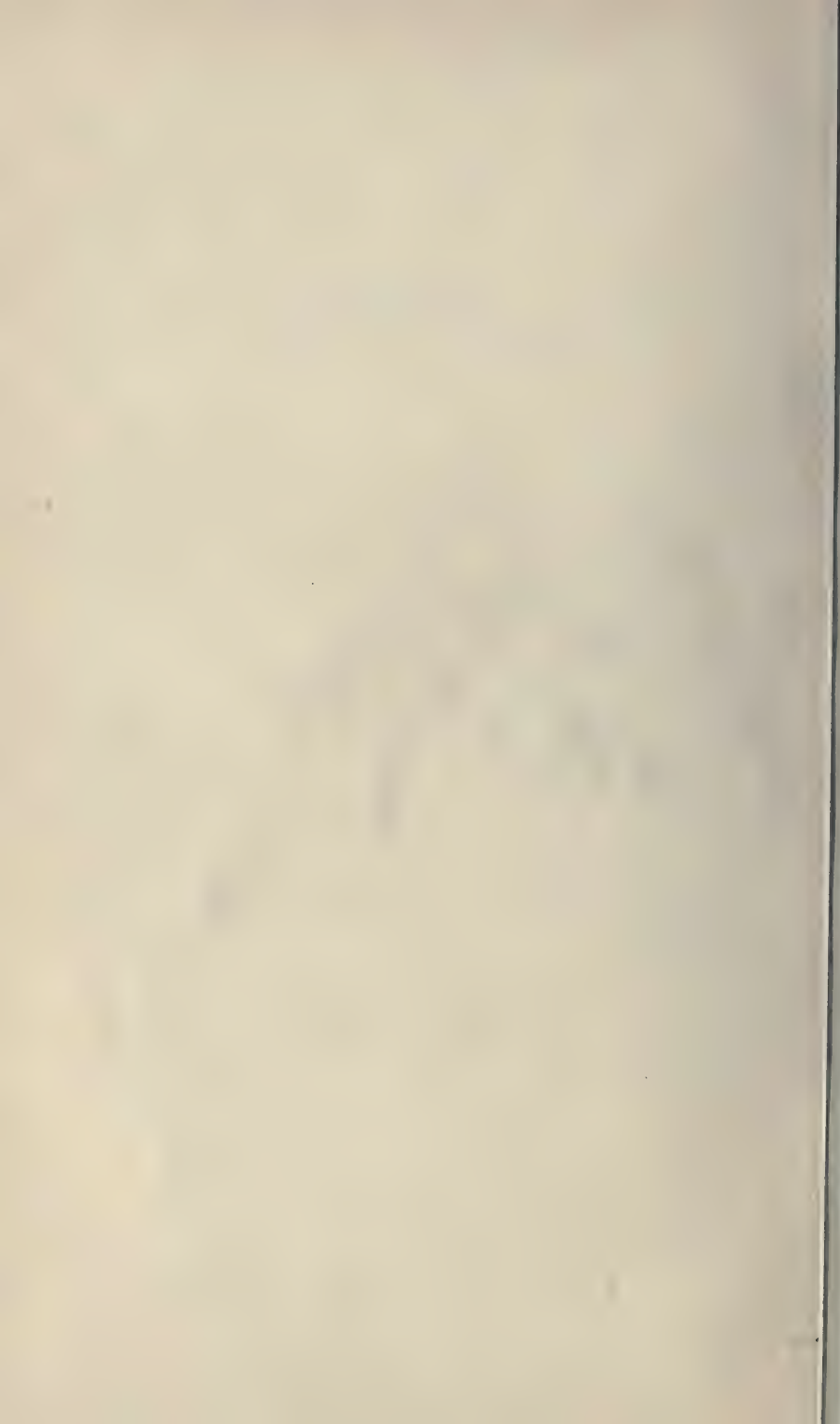
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A GUIDE

TO

DOMESTICATED ANIMALS

(OTHER THAN HORSES).

Domesticated Cattle.

The Domesticated Cattle of Europe are in most cases descended from the extinct black Wild Ox or Aurochs (*Bos taurus primigenius*), which survived in Poland till the middle of the 16th century. The earliest domesticated breed in Great Britain is the Celtic Shorthorn (commonly called *B. longifrons*), of which the remains occur in Pre-historic and Roman deposits. The White Cattle of Chillingham, Chartley, and certain other British parks have been regarded as truly wild animals; but their colour is alone sufficient to indicate that they are the semi-albino descendants of domesticated breeds. In addition to these, the more important native breeds met with in the British Islands are the Shetland, Highland, Pembroke or Welsh, Kerry, Polled Angus, Ayrshire, Galloway, Polled Suffolk, Devon, Hereford, Long-horn, and Short-horn. The Jersey, Guernsey, and Alderney breeds have been introduced from the Channel Islands. Among Continental breeds, the long-horned and fawn-coloured Hungarian Cattle, which range through Turkey into Western Asia, and the whitish, long-horned Podolian Cattle of Poland and North Italy, characterised by the height of their fore-quarters, show evident signs of affinity with the Aurochs in the black "points" of the adult bulls. The cows and calves, on the other hand, are wholly white.

European Cattle have been introduced into America, Australia, New Zealand, etc., where they have become half-wild. In South America the Niatu, or Snub-nosed Cattle, form a very remarkable breed.

**Chillingham
Park Cattle.**

The White Cattle of Chillingham Park, Northumberland (like those of certain other British parks), are, as already mentioned, semi-albinos, descended (as indicated by their red or black ears) from dark-coloured Cattle, allied to the Welsh, or Pembroke, breed, which is one of the oldest in Britain, and nearly related to the Aurochs. There is a white strain of Pembroke Cattle, with the ears, muzzle, and fetlocks black, to which the Chillingham Cattle come very close. In shape the black-tipped horns of the Pembroke and Chillingham breeds are identical. Pembroke Cattle show, however, a tendency to develop into the long-horned type, and there is little doubt that the under-mentioned White Cattle formerly kept at Chartley Park, Staffordshire, are a breed showing this tendency. In the Chillingham Cattle the ears were formerly red, but are now black. Red ears could easily be developed from black ones by a kind of degenerate modification. The Aurochs appears to have been generally black, at least in the case of the bulls, but there may have been a red race, or possibly the cows may have been of that colour.

The Chillingham breed is represented in the collection by a bull, the gift of the Earl of Tankerville (1890); the heads of a bull and a cow, also presented by Lord Tankerville in 1885; and the skeleton of a bull, presented by the Duke of Hamilton in 1890.

**Pembroke
Cattle.**

The white breed of Pembroke Cattle is referred to on page 241 of Low's 'Domesticated Animals of the British Islands' as having been formerly common in that county, and a herd is still kept by Mr. C. Matthias, of Lamphey Court and Rhysgwyllt, Pembrokeshire. As mentioned by Low, these cattle are wholly white, with the exception of the inside and part of the outside of the ears, the muzzle, and the feet as far up as the fetlock-joints, which are black. In these respects, as well as in the form of their black-tipped horns, they are essentially the same as the Chillingham Park breed, although the coat is shorter and more sleek. They prove beyond doubt that the Chillinghams are albino Pembrokes, while the latter are as undoubtedly the direct descendants of the Aurochs.

It is noteworthy that on page 307 of Low's book reference is made to the fact that, when transferred from its native mountains to the lowlands, the Pembroke breed displays a tendency towards the Long-horn type, and it seems, indeed, to have been Low's opinion that the Long-horn breed is a derivative of the Pembroke. This opinion is exceedingly important, for it serves to bring the

Chartley Cattle, which are evidently of the Long-horn type, into line with the Pembroke, and thus with the Chillingham breed. They are, in fact, albinos of that section of Pembrokes which has given rise to the Long-horns, just as the Chillinghams are derived from albinos of the typical mountainous Pembroke breed. The tendency to black brindling in strawberry-roan Long-horns is doubtless a throw-back to the ancestral colour, the normal roan or red being easily derived from the black Pembroke, as is exemplified by several local strains of that breed, and likewise by the red ears, which, as the result of selection, formerly characterised the Chillingham breed.

The normal black Pembroke breed is at present represented in the collection by the mounted head of an ox.

Chartley Park Cattle.

Most of the small remnant of the herd of White Cattle which had been maintained since the year 1248 at Chartley Park, Staffordshire, was acquired a few years ago by the Duke of Bedford and transported to Woburn Park. Soon after the arrival of the herd at its new home in 1906 two of the cows died from tubercle, when their skulls were presented by the Duke to the Museum, where they are now exhibited on the top of one of the Cattle cases. As may be seen by comparison with those of other breeds exhibited on and in the same case, the Chartley skulls differ widely from the type characteristic of the Chillingham and Pembroke breeds in the setting-on and shape of the horns, and come much nearer in this respect to the Hereford, Devon, and Long-horn breeds, all of which are probably more or less nearly related. The horns, for instance, are not set upon the very topmost ridge of the skull, but somewhat below this; and instead of being directed upwards in the pitchfork style characteristic of the Chillinghams and Pembrokes, bend downwards and inwards in the Long-horn and Hereford fashion. Moreover, although the horns are somewhat darker at their terminations than elsewhere, they do not show the well-defined black tips characteristic of the Chillingham and Pembroke type. So far as their skulls and horns are concerned, the Chartley Cattle appear to be more nearly related to the Long-horn and Hereford breeds than to the Chillingham, Pembroke, and Short-horn strains. On the other hand, the Chartley, like the Chillingham Cattle, exhibit a marked tendency to throw back to a black type; and a cow and her calf among the survivors of the herd sent to Woburn were wholly black. Now black is not to be met with (at all events normally) either among the Devons, Herefords, or Long-horns; red being characteristic of the two former, while

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strawberry-roan, or bay, is prevalent in the latter. The probable origin of the Chartley Cattle from a special branch of the Pembroke is alluded to in the paragraph devoted to that breed. In addition to the two skulls mentioned above, the breed is represented in the collection by the mounted head of a cow, also presented by the Duke of Bedford in 1906.

Highland Cattle.

The Highland breed, which is nearly related to the Pembroke, although generally bay or fawn in colour instead of black, is represented in the collection by the head of the bull 'Sconach Ruadh,' presented by Mr. J. H. Leigh in 1903.

Kerry Cattle.

The Cattle of Kerry, together with other Irish mountain-breeds, are related to the Pembroke and Highland Cattle and to the white Park breeds, with which they agree in the form and colour of their horns, and their soft, unctuous, orange skins. They are generally black, with a whitish line along the spine, this light dorsal streak being a feature common to the Spanish Fighting Bull and the extinct Aurochs. The Dexter-Kerry, which may be red, is an improved breed, taking its name from an agent to a former Lord Hawarden; the light dorsal streak is lost.

The latter breed is represented in the collection by the mounted skin of a black ox, purchased in 1900, and also by the head of a red cow (a prize-winner), presented by Mrs. Leatham in 1903.

Short-horns.

The Short-horn breed is represented by the replica of a miniature model of a Holderness ox, made by G. Garrard, A.R.A., in 1800, showing the form of this breed more than a century ago. The original is in the possession of the Duke of Bedford. There are also three mounted heads of bulls. The first of these is 'Duke of Tregunter' (Herd-book, No. 26,021), presented by the Short-horn Society in 1906. This celebrated bull, which was bred by Sir R. Gunter in 1867, was the son of 'Duke of Wharfedale 3rd,' and a typical example of the 'Bates' strain. When five months old, it was sold for £525. The second head is that of 'Knight of the Shire' (Herd-book, No. 26,552), a son of 'Commander-in-Chief,' and bred by Mr. T. C. Booth in 1867. This bull, which sold for £1,323 as a calf, was a fine example of the 'Booth' strain. This specimen was likewise presented by the Short-horn Society in 1906. The third head is that of 'Scottish Archer,' a bull owned by Lord Middleton, the donor of the specimen.

The prevalence of bay and strawberry-roan, mingled with white, in Short-horns (which are evidently derivatives from the Aurochs-Pembroke type) indicates how the same colour may have been evolved in the case of Herefords and Long-horns from the black Pembroke.

Long-horns.

The Long-horn breed, which, as mentioned above, appears to be related to the Chartley, and thus to the Pembroke breed, is represented in the collection by a replica of a miniature model of a Leicester Long-horn Ox, made by G. Garrard, A.R.A., in 1800, which shows the form of this breed more than a century ago. The original is in the possession of the Duke of Bedford. Also by the mounted head of a bull bred in the Isle of Man, and presented in 1907 by Mr. G. C. Bacon, and another of a cow, from Norfolk, presented by Mr. E. Tingey in 1903.

Devons and Herefords.

Of these breeds the collection includes a replica of a miniature model of a Devon cow, made by G. Garrard, A.R.A., in 1800, which is of interest as showing the form of this breed more than a century ago. The original is in the possession of the Duke of Bedford.

There is also the mounted head of an Ox of the same breed, and likewise one of a Hereford Ox; the one purchased in 1900 and the other in 1901.

Polled Cattle.

The Polled, or Hornless, breeds are represented in the collection by the mounted head of a Red Polled Ox from Norfolk, presented by Mr. F. Crisp.

Jersey Cattle.

Of the Jersey breed the Museum possesses the head of the bull 'Viceroy' (Herd-book, No. 6102), presented in 1901 by Mr. Edwin Brough, the owner and breeder. As mentioned later, Jersey Cattle present a certain approximation to the Spanish fighting breed.

Some Continental Breeds.

One well-known breed is represented by a miniature model of a Friburg or Simmenthal Bull from Simmenthal, in Switzerland, which was purchased in 1901. This breed, which has many of the characters of the Short-horn, but with the body and neck longer, is an ancient one probably derived directly from the Aurochs. The colour may be either black and white or fawn and white.

A nearly allied breed is represented in the collection by a miniature model of an Allgau bull, from Hungary, which was purchased in 1901.

Although there are at present no examples in the Museum, reference may be made to the black and white or brown and white Dutch Cattle, which seem to approximate to the Ayrshire breed, and have spread from Holland over a large part of Germany. They are regarded as direct descendants of the Aurochs.

In the Vollynyian province of Poland occurs a breed resembling in general characters the ordinary black and white or chestnut and white cattle of Western Continental Europe. In a very considerable percentage of these cattle (whether the dark areas are black or chestnut) a broad and uninterrupted white stripe runs along the whole length of the spinal region; the rest of the body being pied in the ordinary manner. This white dorsal line gives to those individuals in which it occurs a unique and unmistakable appearance, this peculiar type of colouring being apparently less common in the Dutch breed, in which, however, it may sometimes be seen. As already mentioned, the Aurochs (which survived to a later date in Poland than elsewhere) is known to have had a light dorsal stripe in its otherwise black coat, a trace of this being noticeable in some of the black Spanish fighting bulls. If the domesticated cattle of Poland be the descendants of the wild race, it seems probable that, with the development of partial albinism, the light dorsal line of the ancestral form would be the first area to turn white; and that this white stripe would have a strong tendency to persist in the breed, even when a further advance towards albinism is displayed by the replacement of the black areas by chestnut. In the form, colouring, and direction of their horns the Polish Cattle are essentially Aurochs-like, and in the prevalence of the white dorsal band appear to present further evidence of near kinship with the ancestral Wild Ox.

Very different to any of the above are the large pale-coloured and long-horned Podolian and Hungarian Cattle. The latter are represented by a miniature model of the Hungarian bull, 'Hunyadi,' bred at Meszhegyes, as well as by the model of a second bull of the same type.

These models (which were acquired by purchase) show that in the bulls of this breed the general drab colouring is relieved by black markings round the eyes, and on the muzzle, dewlap, and other parts of the head and body. In the oxen, on the other hand, as represented by a fine head exhibited in the wall-case and purchased

about 1840, and likewise in the cow, the whole head and body is uniformly whitish or drab. The retention of the dark 'points' in the adult bulls affords, in all probability, decisive evidence of the descent of the breed from the Aurochs.

Spanish Cattle. Spanish Cattle, of which three types are recognised, namely, the Northern Gallego (Aragon) and Navarra breeds, the Central or Castilian breed, and the Southern or Andalucian type, are represented in the collection by a black Fighting Bull, the gift of Mr. Farquharson Johnston, as well as by two mounted heads and a skull and horns of the fawn-coloured Draught Oxen, which were presented by H.M. the King, and pertained to living specimens presented by the Empress Eugénie to H.M. Queen Victoria, by whom they were kept for some years at Osborne, Isle of Wight. Miniature models of these royal cattle are likewise exhibited.

Of the three types, the Gallego and Navarra, or northern form, is characterised by its regular proportions, generally light colour (yellowish-fawn or pale chestnut), and large horns, which are directed mainly upwards and backwards. The central, or Castilian breed, on the other hand, is distinguished by great size and stoutness, the straight line of the back, the dusky colour, which is often almost black, and the well-proportioned horns, which are directed mainly forwards. Finally, in the southern or Andalucian type we find the size and build medium, the line of the back sinuous, the colour generally dusky, although sometimes black and white, or even chestnut and white, and the horns of the same type as in the preceding. The horns of the last two breeds may, indeed, be compared to those of the tines of a pitchfork held horizontally, with the concavity upwards; while those of the first or northern type may be likened to the same instrument held vertically, with the concavity of the tines backwards. These three main breeds or types may be divided into eight sub-races or strains, probably induced by crossing and local conditions, the characteristics of which cannot be given in this place.

Ancient bronze bas-reliefs of the Celto-Iberian epoch, as well as certain ancient Spanish coins, exhibit unmistakable representations of the northern type, with its large upwardly-directed horns, and it would accordingly seem that this was the breed possessed by the ancient inhabitants of the Peninsula. This is confirmed by the existence of a similar type of Cattle over a large part of southern Europe, especially Italy and Greece, as indicated on the ancient

monuments of these countries. This large-horned breed of light-coloured Cattle, it has been suggested, is derived from the Zebu or Humped Cattle by the elimination of the hump as the result of selection. Be this as it may, the breed seems to be of Eastern origin, and to have been imported into Spain in a domesticated condition.

Such a breed introduced by the Greeks and Romans cannot but have modified and absorbed the indigenous Spanish Cattle, and it is to this Græco-Roman importation that the uniform colour of the Cattle of northern Spain is due. It is known that fawn or chestnut was specially favoured by the ancient Romans in their Cattle, and it is this colour which is most prevalent among the Cattle of Gallego and Navarra. Nevertheless, there are a certain number of white Cattle which may be the descendants of the Roman sacrificial breed.

The existence of the large-horned and light-coloured breed of Cattle in the Peninsula during Celto-Iberian times being proved, it remains to demonstrate the presence, at the second epoch, of Cattle resembling the modern Castilian and Andalucian breeds. The most important piece of evidence is the 'stone of Clunia,' which was in existence in Peñalva in 1774, but subsequently destroyed. On this Celto-Iberian monument was represented a bull-fighter, in full array, prepared to receive the charge of a bull, while the legend is the ancient equivalent for a bull-fight.

In this monument (unlike those of the same period already referred to) the bull is represented with horizontally-directed horns of the type of those of the Castilian and Andalucian breeds and also of the Aurochs. Whether the animal depicted was a wild bull (the Aurochs doubtless existing at this date in Spain as in the rest of Europe) or a domesticated individual cannot be definitely determined; but it indicates the existence in the Celto-Iberian epoch of Cattle with the Aurochs-type of horns. In accord with this is the close resemblance of the modern Spanish Cattle of the Castilian breeds to the Aurochs, as described and figured by Herberstein in the sixteenth century. Not only have the horns the same general form and direction, but the black hue of the modern breeds is the same as that of their extinct relative; while more important still is the fact that both the Aurochs and the Castilian bulls show a fawn-coloured line running down the middle of the back.

It has accordingly been suggested that the Cattle of central Spain are the direct descendants of the wild Aurochs. The southern or Andalucian breeds seem, on the other hand, to have been crossed with Cattle imported by the Arabs, which would account for their

inferior size and frequently piebald colouring. The difference in size between the large Gallego and the small Navarra Cattle of the northern type may be largely due to the mountain habitat of the latter. The Castilian and Andalucian bulls and those of the Navarra breed of the northern type are employed in the ring, while the large Gallego Cattle are those used for draught and agriculture.

The affiliation of the black Castilian, and in a less degree the Andalucian, breeds of Spanish Cattle to the wild Aurochs strengthens the opinion as to the existence of an intimate relationship between ancient Welsh and Irish breeds, like the Pembroke and Kerry, to the latter.

Of not less interest is a theory that the large-horned and dun-coloured northern Spanish breed of Cattle, together with the large, light-coloured Cattle of Greece, Italy, and certain other parts of southern Europe, are descended from the humped Zebu. This approximation to the Zebu type is shown by the horns of the two heads of Spanish Draught Cattle presented by the King to the Museum, which are exhibited in the case on the south-west side of the North Hall.

The horns of all Humped Cattle—both Indian and African—differ from those of the Aurochs and the related types of European domesticated cattle by their distinctly lyrate shape, the first main curve having the convexity in front instead of behind. Their tendency is also to grow upwards and backwards, rather than forwards, and they may be, as in the Galla Cattle, very large. Other characteristics of the Zebu are to be found in the large dewlap, and the white rings round the eyes and the fetlocks; the light fetlock-rings being remarkably constant in all the half-breeds so common in Northern India. Now, Spanish Draught Cattle of the Gallego breed not only exhibit an approximation to the Zebu, and especially to the Galla, type in the direction, curvature and size of the horns, but also show a similar large dewlap, and light rings round the eyes and the fetlocks. The horns of the large whitish Italian Cattle also approximate, especially in direction, to the same type; and to a certain extent a similar feature is noticeable in the horns of the large pale-coloured Podolian and Hungarian Cattle, breeds which also have a large dewlap, and, despite their light colour, traces of white rings round the eyes and the fetlocks.

The foregoing features observable in the north Spanish and other light-coloured South European Cattle are those we should expect to find retained in breeds descended from the Zebu, which have been so altered by selection and crossing (probably with the

indigenous Cattle of Europe) as to have lost the characteristic hump of the ancestral stock.

This Zebu ancestry can, however, only be regarded as a suggestion, which accords with the available facts, and if confirmed would clear up many difficulties.

Whether the Zebu theory be true or not, there appears to be justification for assuming a dual ancestry for the Cattle of Europe. On the one hand we have the Aurochs-like breeds, such as the Castilian, Andalucian, Channel Island, Pembroke, Kerry, Highland, and white Park Cattle, which are evidently the direct descendants of the wild Aurochs, and are usually uniformly black or chestnut in colour, except when they display albinism. On the other side are the large-horned north Spanish, Italian, Grecian, and Hungarian breeds, which are all light-coloured animals, with large dewlaps and white rings round the eyes and fetlocks, and are almost certainly the descendants of a second ancestral stock.

The following are some of the chief herds kept for the ring :—

Of the northern, or Navarra, breed, the best are Perez Laborda's and Lizazo's, both at Tudela, near the Aragon border ; others, of a mountain type, are kept near Tolosa, on the Guizuzcoa side of the range.

Of the central, or Castilian, breed, the herd of Maspule, of Valladolid, to which belonged the famous 'Senorito,' was incorporated with that of the Marques de Gartiria, of Gijon. The Duque de Veragua's herd, dating from 1780, and known as 'La Munoza,' of Aranjuez, was incorporated with that of Ulloa, from Utrera, Andalucia, and is thus mixed. North of Madrid are the herds of Gomez, Aleas, Vicente Martinez, and Fuentes ; the two last known as 'de la Moral zarzal,' and renowned for strength and bravery. Another Castilian herd is that of Don Estaban Hernandez. There are also herds in La Mancha, such as those of Flores ; Barbera, near Ciudad Real ; Escalera at Menasalva, near Toledo ; as well as in Estremadura and at Villarubia. Others, again, are kept near Cordova, for instance the herds of Gutierrez at Almodovar and of Rivero.

Of the southern, or Andalucian, breed the following herds exist or recently existed near Seville, viz. : Miura, Camara, Muruve, Perez de la Concha, Anastasio Martin, Ybarress, Marques del Saltillo, Lesaca, Hernandez (Freire), Barquero, Benjumea, Concha Sierra, and Adalid. Others are Barrero, at Jerez de la Frontera ; Larraz, at San Lucar de Barrameda ; and Herrera, at Puerto de Santa Maria.

FIG. 2.



HEAD OF ANKOLI COW.

FIG. 3.



BANTING STEER FROM BALI.

Niatu Cattle.

The Niatu Cattle of South America are characterised by the remarkable shortening of the bones of the nose and muzzle, the latter of which is much turned up, the palate being in consequence highly convex. The lower jaw projects in front of the muzzle. In colour these Cattle are generally black and white. They are represented in the collection by a skull of a Niatu Ox, from Buenos Aires, presented by Mr. G. Claraz in 1887.

Ankoli Cattle.

In the big case on the south-west side of the North Hall is exhibited a mounted head of a cow of the long-horned Ankoli, or Uganda, Cattle; a skull and horns of a bull of the same species being shown on one of the pillars. The Ankoli Cattle (fig. 2) have no hump, and while the bulls are generally white, the cows are red. Their enormous horns are characterised by extreme slenderness, smoothness, upright direction, and wide separation—features in which they differ widely from those of the Galla Cattle. They are, moreover, placed at a much greater distance above the eyes than is the case in the Indian Zebu. In general form the skulls and horns of the Ankoli Cattle approximate to those of the much smaller ancient Egyptian breed, examples of which are exhibited in the same case. That these Cattle were also humpless is shown in an illustration of a fresco of the fifth dynasty, about B.C. 300 (fig. 1), framed on the pillar carrying the Ankoli bull skull. It thus seems probable that the modern Ankoli and the ancient Egyptian breeds are closely allied. The latter were identified by Dr. E. Lortet, in the *Archives* of the Lyons Museum for 1903, with the *Bos africanus* of Fitzinger and Brehm, that is to say, with the Galla Cattle, with which they have nothing to do. In 1904 the name *Bos ægyptiacus* was proposed by the author of the present Guide-Book for the ancient Egyptian Cattle, as typified by Dr. Lortet in the volume cited; the question being left open whether these cattle (to which the Ankoli breed may be provisionally affiliated) should be regarded as a distinct species, or merely as a local race of the European Ox (*Bos taurus*).

Humped Cattle.

A perfectly distinct species is represented by the Humped Cattle, or Zebu (*Bos indicus*), of India and Africa, some of the characteristics of which have been already mentioned under the heading of Spanish Cattle. These Cattle take their name from the presence of a large fleshy hump on the withers; but they are also distinguished from ordinary Cattle by the form of their horns (in which the first curve is forward instead of backward), and the general presence of a whitish ring above each eye and round each fetlock. In India the colour, which may vary from very pale

fawn to drab, is generally uniform; but in Africa there are parti-coloured breeds. Some of the Indian breeds are dwarf.

The ordinary Indian breed is represented by a bull received from the Zoological Society in 1888.

In several of the African breeds of Humped Cattle, such as the Galla Oxen, the horns attain huge dimensions, especially in the matter of girth. Several fine pairs of horns are exhibited, among which is one presented by the Abyssinian traveller Salt.



FIG. 4.—NUER HUMPED OX. (From a photograph by Captain S. S. Flower.)

Near akin to the Galla breed are the Nuer Cattle, of the Eastern Sudan (fig. 4), which, in addition to a well-marked hump, have very massive, incurving, lyrate horns, with closely approximated tips (fig. 4). Humped Cattle with horns of a somewhat different type (fig. 5) occur on the Blue Nile.

The Nuer Cattle may be either uniformly or parti-coloured, but in West Africa the Moshi and Hausa Cattle are generally, if not invariably, parti-coloured, and often distinctly spotted. In one Moshi Ox the head, middle line of the back, and under-parts were white, and the greater portion of the neck and sides dark. In



BLUE NILE HUMPED OX.

From a photograph by Captain S. S. FLOWER.

FIG. 6.



HEAD OF UNICORN RAM.

To face p. 12.

general characters these Cattle agree very closely with the figure of a Damaraland Ox given by Dr. Heck in the *Illustrirte Zeitung* for 1895, although in the latter the dark and light areas form an irregular marbling all over the head and body. Here may be mentioned plaster-casts of two enormous ox-horns received at the Museum from Madrid. Although their place of origin is unknown, they apparently belong to a breed allied to or identical with Galla Cattle. The largest specimen measures $47\frac{1}{2}$ in. in length along the curve, and has a basal girth of $33\frac{1}{4}$ in.; while the corresponding dimensions of the smaller one (which contracts very suddenly in calibre near the middle) are $28\frac{1}{4}$ in. and $27\frac{1}{2}$ in. In a Galla Ox skull presented to the Museum by Messrs. Denham and Clapperton the length of the horns is $42\frac{1}{8}$ in. and the circumference $23\frac{5}{8}$ in.

Gayal. Among the hill-tribes of north-eastern India and Tenasserim the heavily-built, olive-black Gayal or Mithan (*Bos frontalis*) is kept as domesticated cattle, the Kukis and Manipuris breeding large numbers of these animals. The Gayal is probably a domesticated breed of the wild Gaur, or Seladang (*Bos gaurus*), of India and the Malay countries, although it has received a separate scientific name (*Bos frontalis*). The head of a cow is exhibited in one of the large cases in the North Hall, and the mounted skin of a bull in the saloon at the end of the Lower Mammal Gallery.

Banting. In the Island of Bali, lying to the south-east of Java, the domesticated cattle are a tame breed of the wild Banting, or Bantin (*Bos sondaicus*), of Java, known to the Malays as Sapi-Utan (Wild Ox). Large numbers of domesticated Banting (fig. 3) are exported from Bali to Singapore for food. It is to Mr. C. Boden Kloss that the Museum owes a steer of this breed, which is exhibited alongside the big Zebu bull. The colour of the skin is rich maroon-brown, and the legs are wholly white from some distance above the knees and hocks to the hoofs. The white rump-patch is, however, much smaller than in the typical wild Banting, being confined to the hind side of the buttocks, and not surrounding the root of the tail.

Domesticated Buffalo. A domesticated, or semi-domesticated, breed of the Wild Asiatic Buffalo (*Bos bubalis*) is kept by the natives throughout India, Ceylon, and the Malay countries. Among the Hindu tribes, by whom all members of the Ox family are regarded as sacred, Buffaloes are kept only for the sake of their milk, or for agricultural and draught purposes. From India the domesticated breed was probably introduced at an early

date into Egypt and Western Asia, whence it has gradually spread into various parts of Southern Europe, such as Hungary, Italy, and Spain. Of late years Domesticated Buffaloes have been introduced into Australia. There is, however, a Pleistocene European race of the species from which it is possible that some of the domesticated stocks may have been derived. In the North Hall are shown miniature models of a male and a female of the domesticated breed, modelled from specimens bred in Hungary, and purchased in 1902.

Domesticated Sheep.

The origin of Domesticated Sheep, of which the ordinary European breeds constitute the species *Ovis aries*, is not definitely known. Most European breeds differ from wild species in being clothed with wool instead of hair; the tail being also much longer than in any of the latter except the Barbary Sheep (*O. lervia*), in which the horns are of a peculiar type. If, as is probable, the long tail be an acquired character, the wild Mouflons or Urials may represent the ancestral stock. A small Sheep with Goat-like horns was domesticated by the Prehistoric Swiss lake-dwellers; and the earliest Egyptian paintings show a domesticated breed of the Barbary Sheep, replaced in those of later date by one with Mouflon-like horns.

The horns are very variable, being sometimes absent in one or both sexes, and in other cases increased to four or more, while in one Himalayan breed they coalesce. In the Wallachian Sheep they assume a more or less upright, corkscrew-like form.

In certain breeds the tail is flattened and the coat hairy, although in the lambs the latter is woolly and affords "Astrachan." In South-western Asia and South Africa the tails of these Sheep are long and heavy, but in the black-headed breed of Persia, Central Asia, Arabia, and North Africa, they are short and rudimentary. The Shiluk Sheep of the Upper Nile have long fat tails and brown hairy coats.

Among the round-tailed breeds, the brown and white Fezzan Sheep have hairy coats. The small Shetland breed also shows some hair mingled with the wool; and in the old small Scotch breed, now nearly extinct, the soft short wool felts badly. In the island of Soa, belonging to the St. Kilda group, is found a small breed of brown-woolled Sheep believed to have been introduced by the Vikings. Four-horned Sheep are found from Iceland to China. There are two breeds of Welsh Sheep, one of which is found in the mountains, and has horns in both sexes, and hair mixed with the wool; while the other occurs in the valleys, and is hornless, with

soft, badly-felting wool. Nearly allied to the Welsh Mountain breed were the Irish Wicklow Sheep before they were altered by crossing. Larger than these are the Kerry Sheep, in which the ewes are frequently hornless, and the fleece is moderately soft and interspersed with hair.

Sheep of the Heath breed, from the mountains and moors of Derbyshire, and the counties to the north, have horns in both sexes, black faces and legs, and a coarse and shaggy fleece. Cheviots are somewhat heavier, with white faces and legs, and moderately fine wool. In the old Norfolk breed the horns of the rams are massive and spiral, the body and limbs long, the face and legs black, and the wool silky and of medium length. The Sheep of Dartmoor and Exmoor exemplify the various Moorland breeds, which are of small size, often with dark or grey faces and limbs, and with or without horns. In the two breeds named, the wool is of medium length, but in other Moorland Sheep it is very short.

In the Southdown breed horns are wanting, the face, ears and legs are blackish brown, and the wool is short, close, and felting. The Dorset and pink-nosed Somerset breeds are long-limbed, horned Sheep, with white faces, ears, and legs, wool of medium length, and the nose frequently flesh-coloured. In the Forest of Dean and the Mendips the Dorsets are represented by a smaller variety; the Portland breed being also allied, but very small-sized.

Merinos, in which the females are usually hornless, and the face and legs are either white or grey, have very long and fine wool. The other long-woolled breeds in which horns are wanting include the New Leicester, Lincolnshire, Romney Marsh, Cotswold, Devonshire, Nottinghamshire, and the long-woolled Irish. They are all large-sized Sheep, with wool adapted for the manufacture of worsted yarn, but unsuited for felting.

British Breeds.

A number of specimens, mainly heads and skulls, represent some of the more striking British breeds. Among them, the Scotch Mountain breed is represented by a wether from Kirkcudbrightshire, presented by Mr. H. Grant in 1900; by the skull of a ram from Argyllshire, presented by Mr. A. J. H. Campbell in 1901; and by two mounted heads of rams. Of the Norfolk breed there is the head of a ram, from Cambridgeshire, purchased in 1903; while the Dorset breed, in which (like the Scotch) both sexes carry horns, is represented by the heads of a ram and of a wether. Other breeds exhibited are Black Welsh, Cotswold, Suffolk, Hampshire Down, Leicester, Shropshire, and Devonshire. In the

Isle of Man, as well as in the Hebrides, Orkneys, etc., occurs a breed of small four-horned Sheep, with brown or black wool. These Sheep are represented in the collection by a ram from the Isle of Man, presented by Mr. G. C. Bacon in 1901 (fig. 10).

Near akin are the aforesaid smaller Soa Sheep, which live in practically a wild state on Soa Island, in the St. Kilda group, and are occasionally, so far as the rams are concerned, four-horned. The collection includes the mounted skin of a ewe and the skull of a ram, both purchased in 1900.

Merinos. The Merino, although practically unknown in this country, is one of the breeds supplying the bulk of the wool-produce of the world at the present day, if, indeed, it does not exceed all other breeds in this respect. Merinos, as their name indicates, were originally a Spanish breed; but in early days the Spanish flocks produced more wool than the factories of the country could work up, and the surplus sheep were sold. In the year 1783, King Louis XVI. of France bought a large estate at the village of Rambouillet, some forty miles west of Paris, where he established an extensive Merino-farm. Other flocks of selected Merinos were subsequently introduced from Spain, with the result that in the course of a century the Rambouillet flock, by careful selection, was developed into a breed of smooth-bodied Sheep remarkable for their large bodily size and the excellence of their wool. The size of the Rambouillet breed is indeed so great that these Merinos have been nick-named 'Elephant-Sheep.' They have the advantage of being much hardier than their Spanish ancestors. Merinos, and especially Rambouillets, have been exported to South Africa, the United States, South America, Australia, New Zealand, etc. The Cape breed appears to be directly derived from the original Spanish stock, and is now the source of the great bulk of the enormous wool-product of that colony. The Rambouillet breed, on the other hand, is extensively kept in France, Germany, Russia, and other parts of the Continent; and has been largely exported to Australia, Argentina, and the United States. In the last-named country the breed now extends from the Atlantic to the Pacific, although pure-bred flocks are limited to certain districts; and in Argentina there are also enormous flocks of choice breeding. The breed is represented in the collection by a fine Merino ram from Cape Colony, presented by the Minister of Agriculture for that Colony in 1906; and also by miniature models of a ram and an ewe, purchased in 1902.

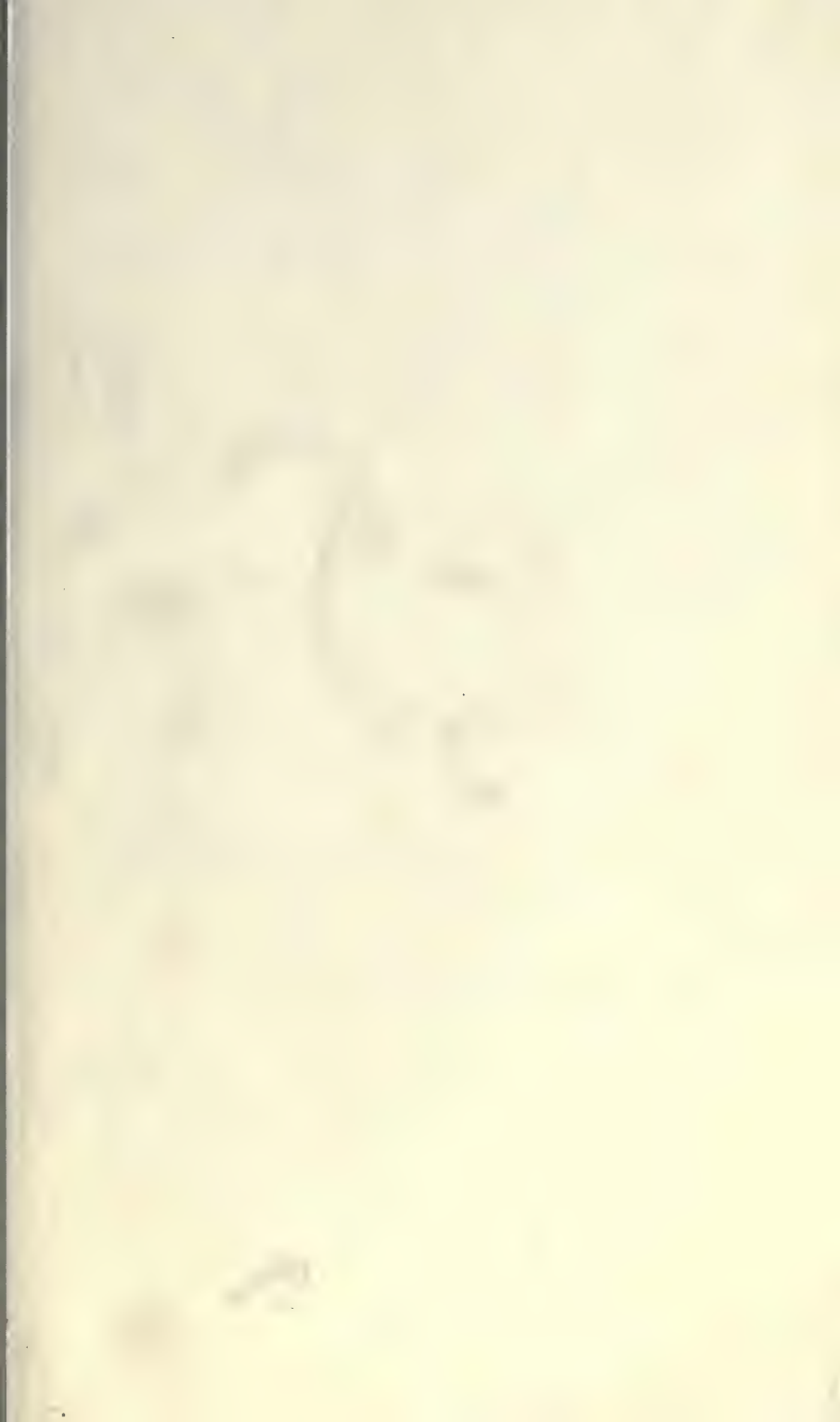


FIG. 7.



ABYSSINIAN MANED SHEEP.

FIG. 8.



WALLACHIAN SHEEP.

To face p. 17.

**Bündner
Sheep.**

In the eighty-third volume of the 'Verhandlungen' of the Swiss Naturalists' Society will be found an account of a peculiar breed of Domesticated Sheep with Goat-like horns formerly kept by the natives of the Bündner Oberland, Switzerland, and hence locally known as the 'Bündnerschaf.' The breed is known to be of great antiquity, but appears to be now almost exterminated owing to crossing with other strains. It appears to be nearly related to the so-called Peat-Sheep (Torfschaf) of the Prehistoric Swiss lake-dwellings, of which it is probably the direct descendant. The Crossbred Valais and Bündner Sheep, of which a ram from Graubünden, Switzerland, is exhibited, represent this ancient breed.

**Corsican
Sheep.**

These small Sheep, which have long buff wool, with the under-side of the body and the legs black, are represented in the collection by two skulls of rams, one presented by H.H. Prince Roland Bonaparte in 1904, and the other by Dr. C. I. Forsyth Major in 1907.

**Hairy
Sheep.**

Two types of Sheep with short tails, hair in place of wool, and the horns small or wanting, occur in Africa. The first, characterised by the smooth coat and long limbs, is the Long-limbed Sheep (*Ovis longipes*). The second, in which the neck and throat are maned, the limbs shorter, and the size smaller, is the Maned Sheep (*O. jubata*, fig. 7). Very generally these sheep are piebald in colour, showing large patches of black or brown on a white ground. In the Long-legged Sheep of Guinea the males have small horns, but in the West Indian breed (imported from Africa) horns are wanting in both sexes. The Camaroons representative of the Maned Sheep appears to be the smallest breed in existence. Limb-bones agreeing in size with those of this breed have been discovered in Wiltshire. It has been assumed that the Long-legged and the Maned Sheep are specifically distinct from the European *Ovis aries*, but this is not certain. The presence of face-glands shows that they are not derived from the Barbary Sheep (*O. lervia*) of North Africa; and as there is no other wild African Sheep, it would seem probable that they are related to the European Mouflon (*O. musimon*).

The West Indian breed is represented by a ram from Barbadoes, presented to the Museum by the Minister of Agriculture for the West Indies. Its most striking features are the uniformly foxy red colour of the coat, and the short and hairy nature of the latter, which displays no tendency to woolliness, and is almost exactly

similar to the summer coat of the wild Mouflon or Urial. The head is, in fact, almost identical in form and general appearance with that of a female of one of those two species, and thus quite different from the long and slender head of the Barbary Wild Sheep, or Udad, which has been regarded as the ancestral stock of the domesticated breeds. The tail is much shorter than in European Domesticated Sheep, not reaching to within a considerable distance of the hocks. From the uniform colour of the coat it would seem probable that the breed is more nearly related to the Urial than to the Mouflon; and if the former were originally domesticated in Persia, it might well have been introduced into Africa by way of Syria. Be that as it may, it seems most likely that in the West African breed we have the earlier stock of the more specialised woolly breeds of Europe.

The Maned breed is represented by a ram from Abyssinia, which has short horns, a brown shaggy coat, and a short tail. The Pigmy breed, from the Camaroons district of West Africa, is shown by a specimen of an adult ram, which stands only 19 inches at the withers. The horns, which are stout and thick, are only about an inch and a half in length, and the coat consists of coarse hair without any trace of wool. On most of the body the hair is about an inch long, but on the neck it is lengthened into a kind of mane, and there is also a ruff on the throat. The general colour of the hair of the upper-parts is chestnut-red, but the ears, the greater part of the face, the throat ruff, the buttocks, the whole of the under-parts, and a large portion of the legs are jet black. The tail is short and thinly haired, not reaching half-way to the hocks. In its black under-parts this sheep presents a remarkable contrast to the wild Mouflon, in which the belly is white with a broad band of black dividing it from the fawn of the flanks. This white belly of the Mouflon is obviously for protective purposes, and with the removal of any necessity for protective coloration in the domesticated breed, it would seem that the black of the flank band has spread over the whole of the under-parts. The shortness of the tail points to affinity with the Mouflon, and also shows that this and the other Hairy Sheep of West Africa have no relationship to the Barbary Wild Sheep.

Hausa Sheep.

The Domesticated Sheep of the Hausas of Nigeria form a well-marked breed, which has been named *Ovis longipes carnapi* (fig. 9). The breed is typically characterised by the hairy coat, the drooping ears, 'Roman-nosed' profile, long legs, long short-haired tail, the presence of a pair of pendent lappets,

or tags, of skin on the throat, and the black-and-white, or brown-and-white colouring. The rams carry a pair of long, spirally twisted, and outwardly directed horns, but the ewes are hornless. Typically the ears of the rams hang straight down, while those of the ewes are directed almost horizontally outwards; and the whole of the head (with



FIG. 9.—A HAUSA OR NIGERIAN RAM.

(From the Report of the Royal Zoological Society of Ireland for 1902.)

the exception of the muzzle) and the body as far back as the loins are black or dark brown, the hind-quarters, tail, and hind-limbs being alone white. In the ewe exhibited the black is, however, confined to portions of the head, the ears are pendent, and there are no lappets on the throat.

**The Hunia, or
Fighting
Sheep of India.**

The rams of this breed are kept by many of the native princes of India for the purpose of fighting. They are characterised by the convex profile of the face, and the short and deer-like tail, which is quite unlike that of most other domesticated breeds. The horns are not unlike those of the Himalayan Urial, or Wild Sheep. Darwin, in his 'Animals and Plants under Domestication,' makes a quotation from a paper by Brian Hodgson published in the sixteenth volume of the *Journal* of the Asiatic Society of Bengal to the effect that the long tail of the ordinary domesticated breeds of Sheep 'in most of its phases is an instance of degeneracy in these pre-eminently Alpine animals.' He appears, however, to have overlooked the statement in the same paper that Hunia Sheep always have short tails, a fact which suggests that this Hunia breed is nearer the ancestral wild stock of Domesticated Sheep in general than is any other strain. A further inference is that the Urial or Shapo of the Himalaya is very likely to be the ancestral stock of at least some of the domesticated breeds. The Museum possesses a number of skulls and horns of Hunia rams, in which the form of the horns is just what might be expected as the results of domestication of the wild Urial. If the Hunia breed be the direct descendant of the wild Urial, its wool may be regarded as an ultra development of the under-fur or *pashm*, which, as in other Tibetan animals, is very abundant in that species. The strongly arched chaffron or 'Roman nose' of the rams of the Hunia breed is mentioned by Brian Hodgson as another feature due to domestication.

A Hunia Fighting Ram from Baroda, India, was presented by H.H. the Maharaja-Gaikwar of Baroda in 1905, and is exhibited, together with many skulls of rams from Nepal, Simla, and other parts of India, presented by Mr. Brian Hodgson in 1848 and by Mr. A. O. Hume in 1891.

Here may be noticed the skull of a short-tailed ram from the Bahr-el-Ghazal, in the Eastern Sudan, presented by Capt. S. S. Flower in 1904, which apparently indicates a breed allied to the Hunia Sheep.

**South African
Piebald Sheep.**

This breed appears to be originally a native of Zululand, but at least half-a-dozen flocks are kept in England. Frequently the rams have only one pair of horns, and their colour is black, with the exception of the face and the tip of the long tail, which are always white. In other cases, as in the specimens exhibited, the rams are four-horned, and

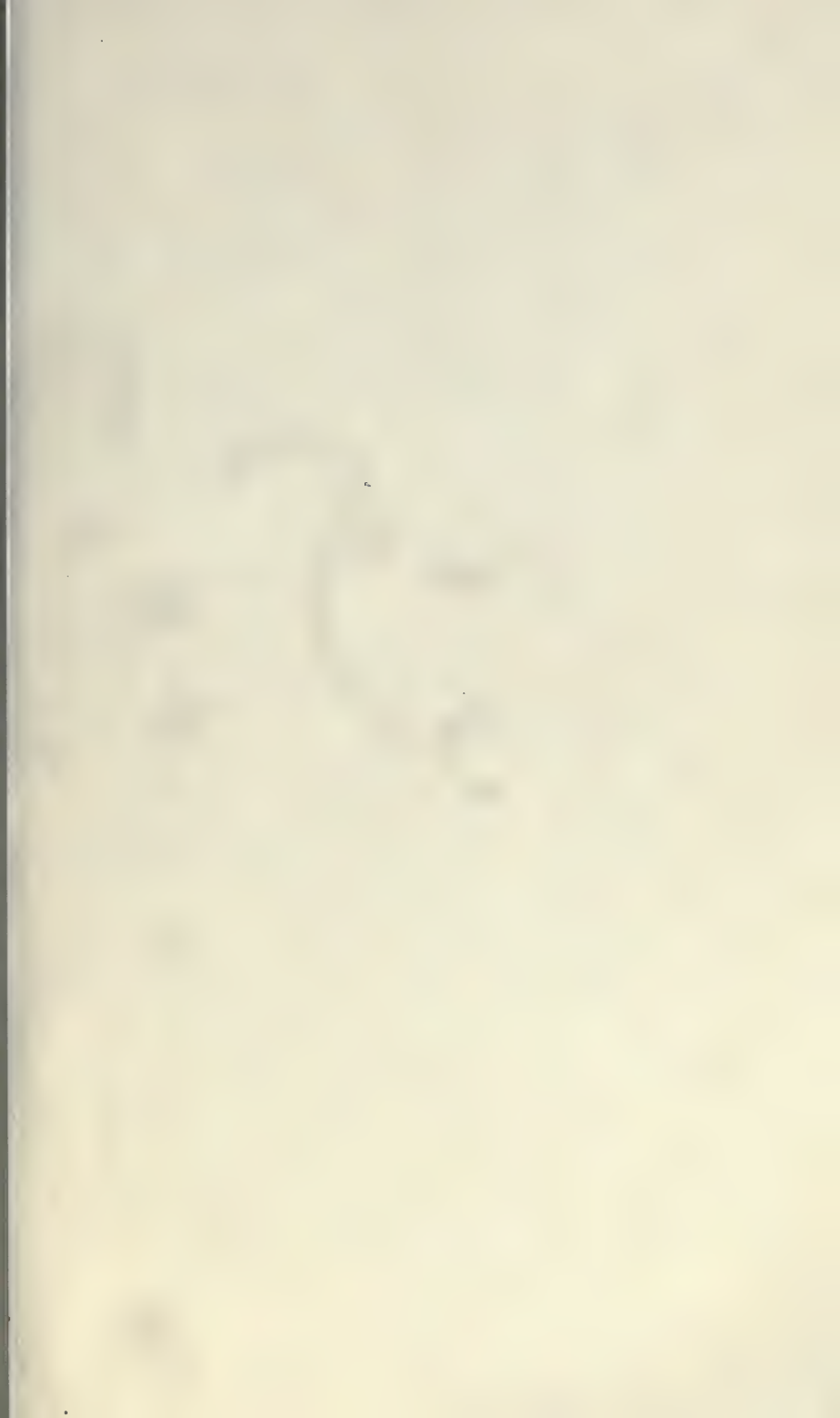


FIG. 10.



FOUR-HORNED HEBRIDEAN RAM.

FIG. 11.



FOUR-HORNED SOUTH AFRICAN PIEBALD RAM.

show much more white. The ewes are either hornless, or with a very small pair of horns. The occurrence of Four-horned Sheep in St. Kilda and Uist has been already mentioned, these being characterised by their brownish, or brown and white, fleece, and brown horns. Some of these Hebridean Sheep have been introduced into certain English parks. In the present breed, on the other hand, when the rams have four horns (fig. 11), the upper pair generally curve upwards and backwards in a curiously Goat-like manner. A more important characteristic is that the horns, whether two or four, are invariably black. The fleece and tail are long; and while the middle of the face is white, the rest of the head and body is generally piebald. Wholly black specimens are, however, by no means uncommon.

Sheep of this breed are kept by the following owners, viz.: The Duke of Devonshire, at Chatsworth; Mr. E. C. Lowndes, of Castle Coombe, Chippenham, Wilts; Mr. J. Whitaker, of Rainsworth, Nottinghamshire; Lady Cowley, of Draycot Park, Wilts; Mrs. Farrer, of Ingleborough, Clapham, Yorkshire; Sir H. Dryden, of Canons Ashby, Northamptonshire; and Col. Platt, of Gorddilog, Llanfairfechan, North Wales. The late Duke of Hamilton also possessed a flock in Scotland.

In regard to the native home of these Sheep, there appears to be much uncertainty among owners. It is, however, certain that they do not come from either St. Kilda or Uist. Perhaps the most satisfactory history exists in the case of the flock owned by Mrs. Farrer. The original parents of these Sheep were brought home from the Cape about a century ago by the present owner's grandfather, Col. Farrer, who believed that they had been imported into the Cape by Spanish or Portuguese settlers, who were supposed to have brought them from their own country. A portion of this original flock was given to Sir Henry Dryden's ancestor, so that the Ingleborough and Canons Ashby flocks have the same ancestry.

Lady Cowley's flock was imported at the time of the last Zulu War, about twenty-five years ago, and consisted of about thirty head. These were small, wholly black, two-horned Sheep, with moderately long wool and long tails. A few of these black 'Zulus' were given by Lady Cowley to Mr. Lowndes, and these were subsequently crossed with piebald two-horned rams from the flocks of Mr. Whitaker and Sir H. Dryden, with the result that the breed was greatly improved in size and stamina, while the rams frequently developed a second pair of horns. That the small black 'Zulus' and the larger piebald breed are identical, or nearly so, is rendered

probable by the fact that the former are not unfrequently four-horned, and also from the circumstance that the Museum possesses the head (presented in 1901 by the Rev. H. G. Morse) of a South African Sheep which is black, with a white face, and has four horns. It is noteworthy that in this head the horns are much smaller than in the English piebald rams, and also that the coat is short and hairy.

It is thus evident that wholly black Sheep, and black Sheep with a large white 'blaze' on the face, occur in Zululand and other parts of South Africa, and also that the rams of these Sheep are not unfrequently four-horned. On the other hand there seems no information with regard to the existence of any such breed either in Spain, Portugal, or North Africa. Consequently, till the contrary is proved, the presumption is that these Sheep are indigenous to South Africa.

The superior size, the longer fleece, and perhaps the greater amount of white on the body in the English strain are features which might naturally occur as the result of better feeding.

That the duplication of the horns in these breeds is due to splitting of the normal pair, is rendered practically certain by a skull of a South African piebald ram presented to the Museum by Mr. W. P. Pycraft. In this specimen each horn is cleft to within a short distance of its base; the minor branch, which is inferior in position, lying close alongside the larger.

The specimens of this breed include a ram, presented by Mr. E. C. Lowndes in 1902; the head of a ram, presented by the Duke of Devonshire in the same year; and the above-mentioned head from South Africa, presented by the Rev. H. G. Morse in 1901.

Unicorn Sheep.

Unicorn Sheep, which are natives of Nepal, take their name from the circumstance that the horns of the rams are completely welded together (fig. 6). The ewes are hornless. The fleece is woolly; the head and neck being black, the body white, and the limbs piebald; the tail appears to be naturally short. These Sheep form a regular breed in Nepal, and are not merely accidental sports. In the adult rams the horns, alike in shape, direction and size, are not dissimilar to those of the Nilgiri Tahr (*Hemitragus hylocrius*); but they are placed so close together that their inner surfaces become practically united, although a transverse section shows that the sheath of each is complete and distinct. From their direct backward curvature, the horns tend to grow into the back of the neck of the animal, so that, as in two skulls in the Museum, it is frequently necessary to saw off the tips.

The ram exhibited was brought home from India by H.R.H. the Prince of Wales in 1906, and exhibited in the Zoological Society's Menagerie, where it died in 1908, when the skin was presented to the Museum by the Council of the Society. The two skulls exhibited were presented to the Museum by Mr. Brian Hodgson in 1848.

Wallachian Sheep.

Among the numerous domesticated breeds of Sheep departing more or less widely from the type of the wild Mouflon and the Urial perhaps the most remarkable is the one commonly known in this country as the Wallachian Sheep, and in Germany as the 'Zackelschaf' (fig. 8). In the typical breed, which appears to have its home in Wallachia and Rumania and some of the adjacent countries of Eastern Europe, the horns, which are of great length, are twisted into close straight spirals, rising from the head with but little outward divergence. This type is shown in a miniature model exhibited among the collection, and in the general form of the horns presents a marked superficial resemblance to the Suleiman race of the Markhor Wild Goat, so much so, indeed, as to have led to the suggestion that the Wallachian Sheep originated from a cross between the last-named species and an ordinary Sheep. In a second breed, apparently a native of Hungary, the horns, although of the same general type, are somewhat more divergent and have the spiral rather more open. So different are Wallachian Sheep from the ordinary type that Linnæus regarded them as specifically distinct from the latter (*Ovis aries*), and gave them a separate name, *Ovis strepsiceros*. Certain horns of the Indian Hunia Ram presented to the Museum by Mr. A. O. Hume indicate that there must be a transitional form between the Wallachian and the ordinary Sheep in the matter of horns; for in these Hunia Rams, although the ordinary 'ammon-spiral' is preserved, the horns are extended much more laterally outwards than usual, and at the same time display a more corkscrew-like type of spiral. The intermediate link seems to be formed by a Hungarian breed in which the horns diverge almost directly outwards in a very open spiral, which is, however, merely an exaggeration of the ordinary Sheep spiral. They are, in fact, almost exactly intermediate between those of the Hunia ram and those of the Hungarian variety of the 'Zackelschaf,' which should therefore be relegated to the rank of a sub-species, or breed of *Ovis aries*, as *Ovis aries strepsiceros*.

The Wallachian Sheep is represented in the collection by a mounted male from Wallachia, purchased in 1903; and also by a miniature model of a male of the Hungarian breed, purchased in 1902. In

addition to these, the collection includes the horns of a male and a female from Wallachia, purchased in 1902.

Fat-Tailed Sheep.

The African Fat-tailed Sheep (fig. 12), of which a fine example is exhibited, is one of the most remarkable breeds in the world, the tail being of great length and also of excessive width at the base. In the specimen exhibited it is considerably over a yard in length, and in life must have weighed several pounds. Fat-tailed Sheep are met with in many parts of the world, but in few of them is the fatness of the caudal appendage so strongly marked as in the South African breed. This appears to be due to that breed, according to the general belief, being the result of a cross between the Persian Fat-tailed and the African Fat-rumped Sheep. It is to the latter breed that the African Fat-tailed Sheep apparently owes the excessive development of the basal portion of the appendage from which it takes its name. The specimen exhibited of the Cape Fat-tailed breed is a ram from Cape Colony, presented by the Director of Agriculture, Cape Colony, in 1906.

Fat-Rumped Sheep.

In the countries to the east and south of the Caspian Sea, such as many parts of Central Asia, Arabia, Persia, and North-eastern Africa, occur certain breeds of Sheep characterised by the tail (which is of the flattened type of that of the Fat-tailed breed) being short or rudimentary, and by the accumulation of large masses of fat on the buttocks (whence the name *Ovis steatopyga*, which has been applied to these Sheep). In the exhibited Arabian breed (fig. 13) the head is black and the body and legs are white, while the coat of the adult is hairy. The lambs have, however, a woolly coat, as have the adults of the Abyssinian breed. In Central Asia both a black and a white strain are kept; the lambs of the former yielding the finely curled wool known as Astrachan. These Sheep are represented in the collection by a ram from Hedjaz, Arabia, presented by Capt. S. S. Flower in 1902.

Domesticated Goats.

Domesticated Goats differ from Sheep by the absence of a gland on the face (the 'larmier,' or tear-gland) below each eye, and the presence of a beard on the chin of the male, or sometimes of both sexes. Rams also lack the strong odour of he-Goats. Sheep have interdigital glands between the hoofs of all the feet, but in Goats such glands are wanting in the hind-feet, and may be also absent in the front pair. The horns of Sheep (when present) generally form a close horizontally directed spiral, with numerous fine transverse wrinkles,

FIG. 12.



SOUTH AFRICAN FAT-TAILED SHEEP.

FIG. 13.



HEDJAZ FAT-RUMPED SHEEP.

From a photograph by Captain S. S. FLOWER.

and are brown in colour. Those of Goats are usually blackish, directed more upwards, and may be either scimitar-shaped or corkscrew-like. The Wallachian Sheep has, however, upwardly-directed, corkscrew-like horns. The skull of a typical Goat differs from that of a typical Sheep by the absence of a pit for the face-gland, by the circumstance that the part behind the horns is rounded instead of flat, and meets the frontal plane at a very obtuse, instead of nearly at a right angle, and by the more concave profile of the forehead. There are, however, hornless Roman-nosed Domesticated Goats without a beard, and Wild Sheep without face-glands, so that it is difficult to distinguish between all the members of the two groups. Most Domesticated Goats (*Capra hircus*) are descended from the Wild Goat (*C. hircus aegagrus*) of the Mediterranean Isles, Asia Minor, and Persia, although some may have been crossed with other species. The ears may be upright or pendent, and both sexes may be bearded. When present, the horns are often of the scimitar-like form of the wild species, but generally with the tips turned outwards instead of inwards; they may, however, be spiral like those of the Markhor Wild Goat (*C. falconeri*) of the Himalaya, although nearly always twisted the opposite way. The Circassian Goat has, however, the spiral running in the same direction as that of the Markhor.

Goats were domesticated by the Prehistoric Swiss lake-dwellers and the ancient Egyptians. The Angora breed is large, with spiral horns, long silky white hair, and pendent ears. The Shawl-Goats of Tibet are somewhat smaller, with under-fur, or *pashm*, at the roots of the long hair. Another long-haired breed is the Syrian or Mambar Goat, which is tall and long-limbed, with very long ears, and shaggy silky black hair. In the Egyptian Goat the limbs are long, the horns short or wanting, the head small, with a convex profile, and the beard generally absent; the short hair is usually reddish brown, tending to yellow on the limbs, but may be slaty grey or spotted. In the Sudan breed the horns do not exceed four inches in length, and curve forward at the tips, the limbs being short and stout. The short and thick hair is usually a mixture of black and reddish; but red, yellowish, brown, black, and spotted examples occur. The black beard reaches the chest, where it divides to spread over the shoulders. The range of this breed extends from the Nile valley to the West Coast of Africa.

In many parts of the world Domesticated Goats have reverted to a wild or half-wild (feral) condition, as in Scotland, and the islands of Skye, St. Helena, and Juan Fernandez.

The following list includes the more important of the specimens exhibited.

The English Goat is represented by the head of a female, 'White Queen,' a first prize winner, presented by Mr. R. Walter in 1901; while of the Anglo-Swiss breed a complete female specimen, 'the Black Arrow,' presented by Mr. H. Greenway in 1901, is shown. Of the Goats that have reverted to a wild state, there is the head of a male with black hair from Scotland, presented by Mr. Cecil Grenfell in 1897; and also two heads of the white variety from Skye, presented by Sir Donald Currie, K.C.M.G.

The Tibetan Shawl-Goat is represented by the horns of a male from Ladak, presented by Gen. Strachey in 1879; and likewise by skulls given by Mr. Brian Hodgson in 1848. To the last-named donor the collection owes the skull and horns of a male of the Circassian Goat; while a second specimen of the same, from Turkey, was presented by Capt. S. S. Flower in 1904. Both these show the reversal of the spiral, as compared with ordinary Goats.

For many years a report was current as to the existence of an 'Antelope-like' Wild Goat in the mountains of the Azores. Thanks to Major Chaves, of the Ponte Delgada Museum, the collection now includes a pair of male skulls with horns, which prove that the animal is a true Goat, probably the descendant of domesticated breeds which have run wild. The horns, which are about a couple of feet in length in both skulls, are, however, remarkably straight and upright, their inner edges being almost in contact in one example for a distance of about 8 inches, although they diverge lower down, while in both they assume the open spiral characteristic of Goats generally towards the tips. It is this unusual uprightness and straightness of the horns that led to the idea that the Azores Wild Goat had an affinity to Antelopes.

A male of the Joura Goat, from the Isle of Joura, received from the Zoological Society in 1903, shows that the markings of this breed closely resemble those of the wild *Capra hircus aegagrus*, which formerly inhabited many of the islands of the Ægean Archipelago, and is still found in Crete, Asia Minor, Persia, etc. The skull of a male Goat from Grand Comoro Island, Mozambique Channel, presented by Sir John Kirk, K.C.B., in 1871, is of interest as showing the wide range of breeds nearly related to those of Europe. Much the same may be stated with regard to a female Bornean Domesticated Goat from Sarawak, Borneo, sent home by Dr. C. Hose in 1903. Of the Angora Goat, the collection includes a fine male specimen from Constantinople, presented by Mr. J. E. Whittall in 1901; and

likewise a skull and a head of a male, also from Constantinople, presented by Messrs. J. Foster in 1902.

The Egyptian, often known as the Theban, or Roman-nosed, Goat has been regarded as a Sheep, but since it presents most of the characteristics of the Goats, may be referred to that group. It is an extremely ancient breed, being represented in the Egyptian frescoes at Beni-Hassan. Of this breed the Museum possesses the mounted skin and skeleton of a male from Egypt, purchased in 1900; and likewise the skull of a male from the Eastern Sudan, presented by Capt. S. S. Flower in 1902. The skeleton of a Chinese Hornless Goat from Shanghai, received from the Zoological Society in 1858, appears to indicate a closely allied breed. On the other hand, the skull of an ancient Egyptian Goat, from a tomb in Egypt, presented by Prof. W. Flinders Petrie in 1900, belongs to a totally distinct breed, with well-developed horns. The skull of a female Goat from Khartum, presented by Capt. S. S. Flower in 1903, represents the Sudan breed.

Pigs. The collection of Domesticated Pigs is at present very small, consisting mainly of a few heads, skulls, and models of some of the chief British breeds. Included in the series is a specimen of the Wild Boar (*Sus scrofa*), bred in Windsor Forest, as representing the original ancestral stock of the European breeds of Domesticated Swine. This specimen was presented by H.M. the King in 1901. Here it may be mentioned that the young of wild Swine are striped, although those of domesticated breeds are for the most part without such markings. It is stated, however, that in Hungary there are Domesticated Pigs which produce striped young. Of Domesticated Swine the collection included mounted heads of boars of the brown Tamworth, black Berkshire, and white Yorkshire breeds, all presented by Messrs. C. & T. Harris & Co. There are also miniature models of a white Yorkshire boar and sow, purchased in 1902, as well as a skull of a white Yorkshire boar, presented by Messrs. Harris in 1903. A few other skulls are also exhibited.

In the same case are shown lower jaws of boars from New Guinea in which the tusks are abnormally developed owing to the upper ones having been broken off. These were purchased in 1903. Near by are shown similar tusks of boars from the Fiji Islands. Both in New Guinea and in Fiji, where they are worn as armlets, it is the custom to produce lower tusks of this abnormal form by the removal at an early age of the upper ones. One specimen, forming a complete circle, was presented by Mr. R. T. Pritchett in 1889, the other by Sir William McGregor, K.C.M.G., in 1886.

Llama and Alpaca.

Previous to the conquest of South America by the Spaniards, the Llama and Alpaca, which are descended from the Wild Guanaco (*Lama huanacus*) of Patagonia, were the only large domesticated animals on that continent, and were fully as important to the Peruvians as is the Reindeer to the modern Lapps. Not only did they perform all the carrying work of the country, but they furnished food and wool. The Llama is the larger of the two breeds, and is variable in colour, although generally white, or white blotched with black or brown, the hair being comparatively short. The males were alone employed to carry burdens; the females supplying milk and flesh. The Alpaca is a smaller and much longer-haired animal, which was bred solely for the sake of its wool. The usual colour is very dark brown or black; and in many examples the hair of the body is so long as almost to touch the ground. The number of Llamas employed by the ancient Peruvians to transport the produce of the Potosi Mines has been estimated at 300,000. The flesh is said to rival the best mutton in quality. Llamas, inclusive of the Guanaco, are the South American representatives of the Camels of the Old World, although they have no humps. Before they were introduced by Europeans, South America had no Cattle, Sheep or Goats. Specimens of the Llama are shown in the North Hall.

Domesticated Dogs.

From the structure of the frontal region of the skull it is evident that Domesticated Dogs (*Canis familiaris*) are derived from wild species related to the Wolf (*Canis lupus*), the North American Coyoté (*C. latrans*), and the Jackal (*C. aureus*), and have no near kinship to the Fox (*Vulpes alopex*). The skulls of the Coyoté and Fox exhibited in the table-case of skulls show, for instance, that in the former the postorbital process of the frontal bone (X) is convex, as in Domesticated Dogs, whereas in the latter it is concave. Whether Domesticated Dogs are derived from Wolves and Jackals, or from one or more extinct species, is uncertain. From the superficial formations of Russia have been obtained the remains of a Dog (*Canis pontiatini*) which, it is suggested, may have been the ancestor of Sheep-dogs and Hounds, and, by crossing with the Wolf, of Mastiffs and Deerhounds. It has, however, to be determined whether this fossil species, which appears to have been nearly related to the Australian Dingo, was really wild. Terriers, Pomeranians, etc., have been regarded as descendants of *Canis familiaris palustris*, of the Bronze period, the latter being a derivative from

Canis mickii, the remains of which occur in somewhat earlier strata on the Continent.

The number of lower teeth in domesticated breeds is greater than in the Asiatic Wild Dogs of the genus *Cyon*. Eskimo Dogs present many Wolf-like characters, and the Dogs of the Hare Indians show a strong resemblance to the Coyoté. In Europe Dogs were domesticated during the Prehistoric period ; and in Egypt several distinct breeds were established between 3,000 and 4,000 B.C.

The greater number of the breeds may be arranged in the following six groups :—

I.—WOLF-LIKE DOGS. Including Eskimo and Hare Indian Dogs, Pomeranians, Sheep-dogs and Collies, Drovers' Dogs, and the Pariah Dogs of Eastern Europe, Asia, and Africa. The Dingo, which is domesticated by the Australian aborigines, has been generally regarded as a distinct species, but comes very close to the Pariah Dogs.

II.—GREYHOUND GROUP. Comprising English and Italian Greyhounds, Deerhound, Irish Wolfhound, and Persian, Afghan, and Russian long-haired Greyhounds or Wolfhounds, the last now generally known as Borzois. These Dogs hunt by sight. The Hairless Dogs of Asia and South America may probably be placed here. Lurchers are a cross between either the Deerhound and Collie or the English Greyhound and Sheep-dog.

III.—SPANIEL GROUP. Includes Field and Water Spaniels, of which there are several breeds, King Charles, Blenheim, Pekinese and Japanese Spaniels, Setters (large Spaniels which point at game), Retrievers, Newfoundlands, and Labrador Dogs.

IV.—HOUND GROUP. In this group are classed Bloodhounds, Staghounds, Foxhounds, Harriers, Otter-hounds, Beagles, Bassets, Turnspits, Dachshunds, Pointers, and Dalmatian or Carriage Dogs. With the exception of the Pointer, the members of this group hunt by foot-scent.

V.—MASTIFF GROUP. Includes English and Cuban Mastiffs, Bull-dog, Great Danes or Boarhounds, Pugs, St. Bernards, and the long-haired Tibetan Mastiff. The Bull-terrier is a cross between the Bull-dog and the Smooth-haired Terrier.

VI.—TERRIER GROUP. Comprises Fox-terriers, Irish Terrier, Skye Terrier, Dandie Dinmont, Yorkshire and Halifax Terriers, English Terrier, Poodles, and Maltese, Russian, and Mexican Lapdogs.

Pariahs and Dingo.

In addition to a large number of skulls exhibited in the table-case, Pariah Dogs are represented in the collection by a female from Constantinople, presented

by the Duchess of Bedford in 1907 (fig. 14); by a male from Egypt, presented by the Hon. Walter Rothschild in 1904; and by a male and female (of which the former is grey and the latter red) from India, which were purchased in 1903. It will be noticed that in general character these Pariah Dogs come very close to the Dingo, the Domesticated Dog of the Australian aborigines, of which a specimen, presented by the Zoological Society in 1901, is exhibited. Although long regarded as an indigenous species, there is little doubt that the Dingo was brought to Australia by the natives on their first arrival.

Eskimo Dog.

Eskimo Dogs, like the Samoyede breed of Siberia, are closely allied to the larger variety of the Pomeranian or Spitz; and in some cases it is difficult to distinguish between the two. Eskimo Dogs are represented in the collection by 'Farthest North,' a dog which formed the leader in the team of Lieut. Peary during his expedition to Greenland. This famous dog, which died in April, 1902, was bred in Greenland, and presented by Miss Casella. Another well-known Eskimo of which the mounted skin is shown is 'Seymour-Franklin,' a female prize-winner, which was born in May, 1888, and died in 1900 (K.C.S.B., No. 30,393). This dog was bred in England by Mr. W. K. Taunton, and presented by him on its death. A third celebrated Eskimo is 'Arctic King,' which was born in England July 1st, 1902, and died May 1st, 1904. This dog was the winner of more than 120 first and special prizes. Its mounted skeleton was presented by Mr. A. P. King in 1907. A fourth specimen of the Eskimo breed, a female from Greenland, was presented by Mr. W. K. Taunton in 1900.

'Chow-Chow.' Near akin to the Eskimo is the Chinese breed known in this country as 'Chow-Chow,' a 'Pigeon-English' term meaning to eat, in allusion to the fact that these Dogs are commonly used for food in China. The first specimen is a male Black Chow-Chow, which was born in March 1892, and died February, 1902. This dog (K.C.S.B., No. 37,905, fig. 15), which was the winner of 6 first and several second prizes and medals, was bred in France by M. Waldeck-Rousseau, and presented by Miss Casella in 1902. The Red Chow-Chow is represented in the collection by the head of Champion 'T'ien,' a female (K.C.S.B., No. 1720A), born in England, May, 1895, which died in August, 1903, and was presented by the breeder, Miss Casella, in the same year.

Sheep Dog.

The old English (Bob-tailed) Sheep-dog is a breed which appears to be of great antiquity, and remarkable for the fact that a considerable proportion of the pups are born

FIG. 14.



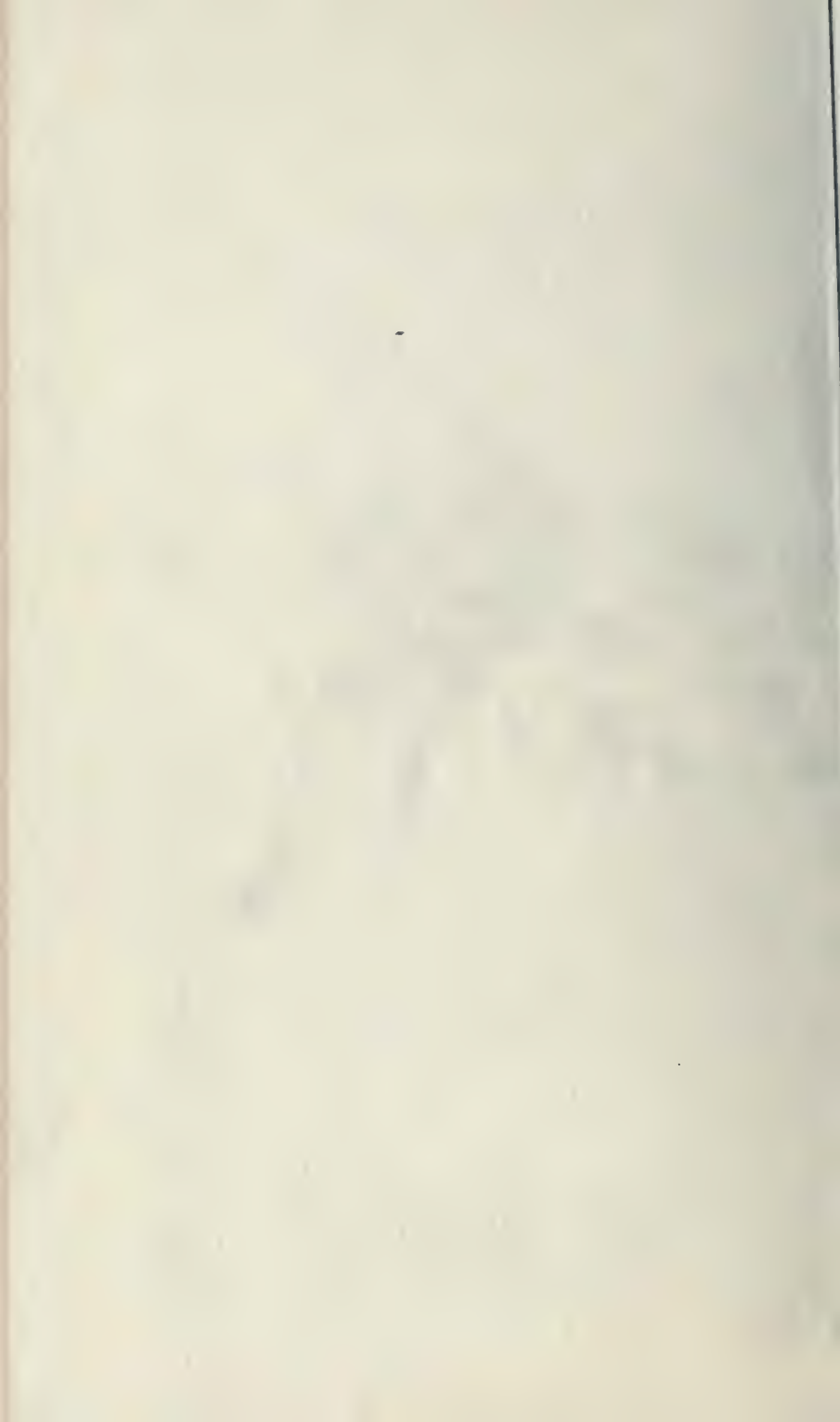
TURKISH PARIAH DOG.

FIG. 15.



CHINESE DOG, OR 'CHOW-CHOW.'

To face p. 30.



with quite short tails, apparently an instance of inheritance of an acquired character. The one example of this breed in the collection is the Champion female 'Fair Weather,' which was born in May, 1898, and died in August, 1907; her sire being 'Sir James,' and her dam, 'Birthday.' She was the most celebrated Sheep-dog of her time, and the winner of a very large number of first and special prizes, cups, championships, etc. The specimen was presented by the breeder and owner, Mrs. Fare Forse, in 1907.

**Collie, or
Scotch
Sheep-Dog.**

The name by which this breed is commonly known in England is corrupted from 'Colly,' which means black-faced, and was originally applied to Highland Sheep instead of to the Dog by which they are tended. Collies of much the same type as the present rough-haired breed were in use in the sixteenth century, and there is little doubt that these Dogs are of a very ancient type. The Rough-coated Collie is represented by 'Roy' (sire 'Trentham Roy,' dam, 'Portington Lassie'), who was born in October, 1896, and died in February, 1904. The breeder was Mr. A. P. Attawell, and the specimen was presented by Mr. F. Stephenson in 1905.

Greyhounds. Greyhounds are built essentially for speed, and specially characterised by their habit of hunting by sight instead of by scent. Coursing existed as a sport in the second century, and the Greyhounds of that period were probably not very unlike the modern breed, although heavier. Greyhounds are represented in Greek and Roman sculptures; and Greyhound-like Dogs were also known to the ancient Egyptians, by whom they were employed in coursing, but whether they hunted by sight or by scent cannot be determined. Some of these ancient Egyptian Hounds resembled modern Greyhounds in general characters, although apparently with shorter legs, but others were more like Borzois, and one (fig. 17) is identical with the Slughy, or Persian Greyhound. Previously to the time of Queen Elizabeth Greyhounds seem to have been larger and more powerful than the modern breed, showing some approximation to Deerhounds, and being employed for hunting deer as well as hares; and it was only after they were used exclusively for coursing hares that the modern type was developed.

The Whippet is a smaller dog, apparently the product of a cross between the Greyhound and a Terrier; while the Italian Greyhound is a diminutive breed. Nearly allied to the true Greyhound is the hairy Persian Greyhound, which leads on to the Afghan Greyhound, the Borzoi, or Russian Wolfhound, the Scotch Deerhound, and the modern representative of the Irish Wolfhound, some of these breeds hunting

as much by scent as by sight. The Lurcher is probably derived from a cross between the Deerhound and the old Talbot Hound.

The English Greyhound is represented by 'Fullerton' (fig. 16), a Dog, born in 1888, who was winner of the Waterloo Cup in 1889, 1890, 1891 and 1892. He was bred by Mr. J. Dent, and sold as a pup for 850 guineas to Col. North. The skin and skeleton were presented by Sir W. J. Ingram, Bart., in 1899, the year in which this famous Dog died. 'Fullerton' is considered to have been the best

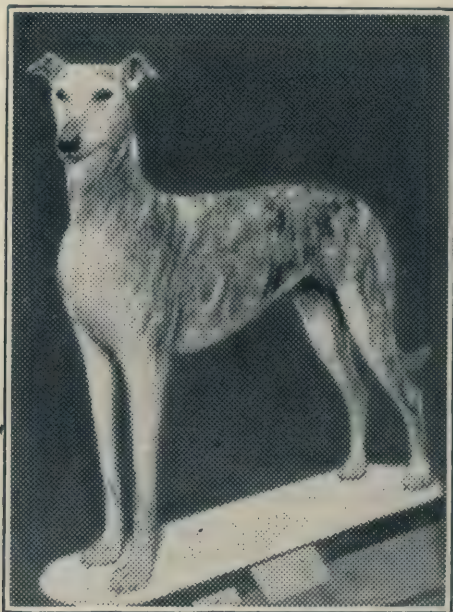


Fig. 16.—ENGLISH GREYHOUND 'FULLERTON.'

Greyhound ever bred. The breed is also represented by the head and skeleton of 'Champion Fairy,' a female which died in May, 1903. These specimens were presented by Mr. J. J. Holgate, the breeder, in 1903. The collection also includes the skeleton of a so-called Australian Greyhound, this being merely the English breed acclimatised in Australia. The Italian Greyhound is at present represented only by the skull of 'Cato,' presented by Miss H. M. Mackenzie in 1902. Here may be placed the Hairless Dogs, of which an English-bred specimen, presented by Mrs. Whitbread in 1903, is exhibited.

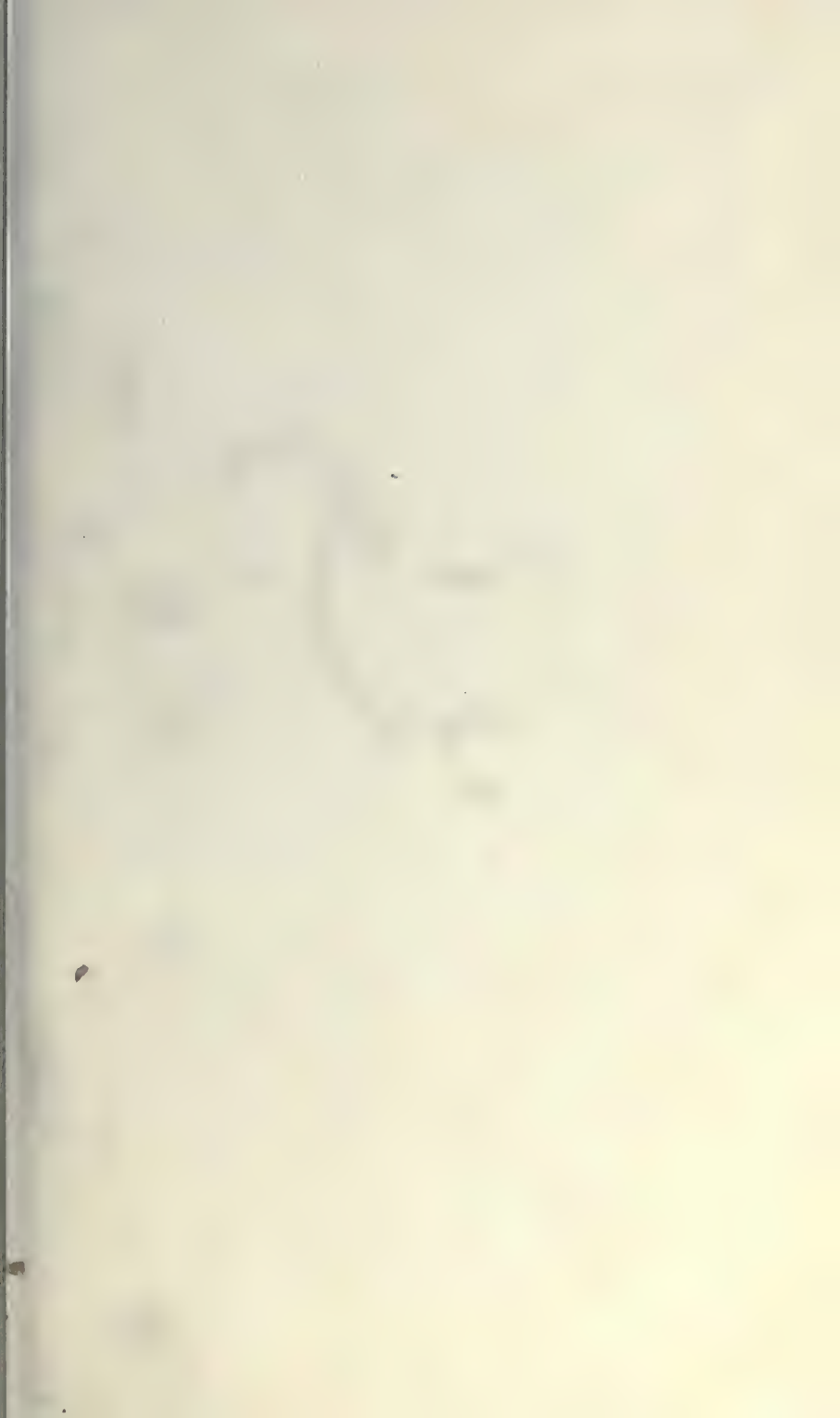


FIG. 17.



ANCIENT EGYPTIAN GREY-
HOUND, OR ZELUGH.

FIG. 19.



MOLOSSIAN DOG, FROM AN
ASSYRIAN BASO-RELIEVO.

FIG. 18.



(A) SLUGH, 'LUMAN.'

(B) AFGHAN GREYHOUND, 'SHAHZADA.'

Slughi.

The Slughi, or Gazelle-Hound, is one of the oldest breeds of Dogs, being represented (under the name of Zelughi) in the frescoes on the tombs of Beni-Hasan, in the valley of the Nile, Egypt (fig. 17). A copy of one of these paintings is shown in the wall-case on the north side of the Hall. The true Slughi is kept by the tribes of the Eastern deserts, the finest strain being in the possession of the Bedouin chiefs. The breed is also known as the Syrian or Persian Greyhound, although short-haired Dogs are likewise included under the former name. These Dogs are used for hunting gazelles, hares, etc.; often with the assistance of falcons, which fly at the head of the quarry. They are bred to match the desert sand in colour, their tint ranging from rufous fawn to dirty white. In the collection the Slughi is represented by 'Luman' (fig. 18, A), who died in 1907 at the age of 11½ years. This Dog was imported as a puppy from the chief of the Tahawi tribe, Lower Egypt. In its prime it had bright golden-yellow hair, passing into deep cream-colour on the face, limbs, under-parts, and the middle of the tail. At the time of its death the face had, however, turned white, and the ears had lost much of their fringe of long hair. The specimen was presented by the Hon. Florence Amherst in 1907.

Afghan Greyhound.

The Afghan Greyhound not improbably represents very nearly the primitive ancestral type from which modern Borzois, Deerhounds, and Greyhounds are descended. The breed is native to Balk, in North-eastern Afghanistan, and belongs to the Sirdars of the Barakhzy family. These Dogs hunt in couples—male and female—and are of high courage. 'Shahzada,' the Dog exhibited (fig. 18, B), was the most typical specimen of the breed in his time in Europe; and as these Dogs are owned by native chiefs, it is difficult to secure good examples. 'Shahzada' was a fine, upstanding hound, reddish-fawn—almost wheaten—in colour. The body is covered with a profusion of soft, golden-coloured hair extending over the ears, shoulders, and half-way down the legs, the lower half of the latter being bare of long hair although the toes are heavily feathered. 'Zardin,' another famous Dog of this breed, of which a picture is exhibited, differs in carrying a greater profusion of coat, and in being creamy rather than golden or reddish fawn in colour, the long hair extending down the legs. 'Zardin' also has a tuft of hair on the head, which is otherwise smooth, as in 'Shahzada.' He stood at least 26 inches at the shoulder; and was brought from Seistan, in Eastern Persia, to Quetta, where he was shown before being imported to England. Nothing is known about

his pedigree or breeder, but he was believed to be five years old when the portrait was taken. In some respects the Afghan resembles the Persian Greyhound, the last-named being, however, less shaggy. 'Shahzada' died in February, 1901, and 'Mooroo,' the female exhibited, in 1903. Both came from Balk, in Afghanistan, and were presented by Mrs. Whitbread.

Borzois. Borzois, or Russian Wolfhounds, are represented in the collection, firstly by 'Count Ivan' (K.C.S.B., No. 515E), who was born July 10th, 1898, died in 1902, his sire being 'Prince Galitzin,' and his dam 'Lady Banga.' This Dog was bred by Mr. J. B. Dixon; and presented by Mr. G. Pauling in 1906. The second example is 'Wilna' (K.C.S.B., No. 534E), a Borzoi bred by the Duchess of Newcastle, and owned by the Duchess of Cleveland. Born in 1897, this Dog died in 1903, in which year the skin was presented by Mr. F. H. Collings. The collection also contains the skeleton of the Borzoi 'Alex,' a son of H.M. the Queen's 'Champion Alex,' presented by Mr. F. W. G. Walker in 1905.

Irish Wolfhound and Deerhound. The Irish Wolfhound had become practically extinct, but has been revived by careful breeding and selection, so that its modern representatives are stated to be very similar to the original type. The modern breed is represented by the skull and mounted skin of 'O'Leary,' a male born in March, 1896, who died in February, 1902. He was bred in England by Mr. G. E. Crisp, who presented the skin and skull. There are also the skulls of a male and female Irish Wolfhound, presented by Capt. G. A. Graham in 1882.

The Scotch Deerhound is represented by 'Marquis of Lorne' (K.C.S.B., No. 33,118), who was born in November, 1891, and died in February, 1903. Bred by Mr. R. H. Westley, 'Marquis of Lorne' was the winner of 30 prizes, including 11 firsts and 7 specials. The skin and skull were presented by Mr. Westley in 1903. Besides this, the Museum possesses the skeleton of another celebrated Scotch Deerhound, 'Champion Rufford Bend'Or.' This Dog, which was born in February, 1896, and died in October, 1902, was bred by Messrs. Holme and Holliday, and was the winner of 50 prizes, including a first prize at Birmingham in 1900, 10 first and challenge prizes in 1901, and 5 in 1902. The skeleton was presented by Mr. F. L. Armstrong in 1902.

Toy Spaniels. Although specimens of the larger breeds of Spaniels are wanting, the collection includes a number of examples of various breeds of Toy Spaniels. Of the Ruby King

Charles Spaniel, the first specimen is 'Sweet English Rose,' which was born on April 23, 1902, and died on June 23, 1903, her sire being 'Young England,' and her dam 'Sweetheart.' She was the winner of 7 first prizes, 2 challenge-cups, 1 championship, and several special prizes. This Dog was bred and presented by Mrs. Kate Stephens. To the same donor belonged 'Solent Duchess,' another specimen of the same breed, which was born on March 16th, 1903, and died on June 23rd, 1906, her sire being 'Superb,' and her dam 'Solent Queen.' This dog won 4 first prizes, 1 challenge-cup, 2 championships, and several special prizes. She was bred by Miss Davies. The Black and Tan breed of King Charles Spaniel is represented by 'Harford Defender' (K.C.S.B., 1719H), whose sire was Champion 'Defender' (K.C.S.B., No. 660A), and dam 'Harford Minnie' (K.C.S.B., No. 1714H). This Dog, which was born in December, 1900, and died in November, 1905, was bred by Mr. F. W. Lewis, of Haverfordwest, and was the winner of first prizes at the Birmingham, Botanical Gardens, Richmond, and Ealing Shows in 1903 and 1904. The specimen was presented by Mrs. Gilpin in 1905. A second representative of the same breed is Champion 'Bend-Or' (K.C.S.B., No. 15,678), who was born in May, 1882, and died about 1896, his sire being 'Victor,' and his dam unnamed. Bred by Mrs. J. A. Bugg, this Dog was presented by the owner, Mrs. Jack Reid, in 1906. Of Blenheim Spaniels 'Rose,' born about 1847, and presented by Mrs. Coe in 1904, is of much interest, as showing the characters of the breed at the middle of the 19th century. 'Chesham Silvio,' who died in October, 1904, shows the modern type of the breed: this specimen was presented by Mrs. J. Hill in 1904. An immature male of the same breed, which was born on June 25th, 1905, and died on April 20th, 1906, is also shown. The sire was 'Little Mafeking,' and the dam 'Chesham Minette.' This puppy was bred by Mrs. J. Hill, and presented by Mr. E. Langstone in 1906. Another male Blenheim Spaniel puppy, which was born on September 11th, 1904, and died eight weeks later (sire Champion 'The Cherub,' dam 'Juniper'), is of interest on account of being considered to be the shortest-headed puppy of this breed ever produced. It was bred and presented by Mrs. Gilpin.

Of Asiatic breeds the Pekinese Spaniel is represented by 'Ah Cam,' a male, and the winner of the champion prize in 1904. He was imported from Pekin in 1896, when about one year old, and died in England on January 1st, 1905. The specimen was presented by Mr. T. Douglas Murray in 1906. The collection also includes the mounted skin of 'Palace Yo Tei,' one of the best Pekinese dogs ever shown in this country, which was presented by its late owner,

Mrs. Vallance, of Aymers, Sittingbourne. 'Yo Tei' was a granddaughter—through both sire and dam—of 'Ah cam,' and, although rather less than four years old at the time of her death, carried off eight first prizes and a bronze medal. Of the Chinchilla Pekinese



FIG. 20.—SIDE AND FRONT VIEWS OF THE SKULL OF THE PERINESE SPANIEL.
(From the Zoological Society's *Proceedings* for 1867.)

Spaniel, the Museum possesses 'Sutherland Kia-Mi,' which was born on October 23rd, 1906, and died on May 3rd, 1907, his sire being 'Sutherland Ouen-ten T'ang,' and his dam 'Sutherland Pon-gee.' The specimen was presented by the owner, Mrs. F. M. Weaver. Japanese Spaniels are represented firstly by a male bred in Japan, and imported to France in 1902, where it died in 1905. This Dog, supposed to be the finest example of its kind in Europe, was presented by Sir W. Ingram, Bart., in 1905. Another Japanese Spaniel, bred in England, was presented by Mrs. Whitbred in 1903; and there is a third example of the breed, the gift of Mr. Rowland Ward. The collection also includes the skeleton of a Japanese Spaniel, presented by Miss Saunders. Figure 20 shows the curiously shortened skull of the Pekin breed.

Here may be mentioned the skull of an ancient Egyptian Dog of the Spaniel type, from a tomb in Egypt, presented by Professor W. Flinders Petrie in 1900.

Newfoundland and Labrador.

These two breeds are represented by a Black and White Newfoundland, bred in England, and purchased in 1901; and by a Labrador Dog, presented by Mr. Rowland Ward in 1901.

Bloodhound, or Sleuthhound.

Bloodhounds were known in England at least as early as 1570, and may be the same as the Lemor, or Lymer, which was in existence in 1486. Although some authorities dispute such a pedigree, the Bloodhound is commonly believed to be derived from the Talbot (the ancestor of the true Hounds), and thus from the St. Hubert of the Ardennes. The latter dates from very early times, certainly from those of the Gauls. In the eighth century it was called the Flemish Hound, of which there were two strains known as the black (black-and-tan) and the white. St. Huberts were brought to England at the Conquest, and again in the time of James I. They were deep-voiced Dogs, with great powers of scent. These two features are characteristic of the modern Bloodhound, which differs somewhat in appearance from its immediate ancestors.

The Bloodhound is essentially a large black-and-tan Hound, distinguished by its enormous pendent ears, wrinkled forehead, sunken eyes, showing a lozenge-shaped inner exposure of the lids, deep drooping lips or 'fews,' and large dewlap. The power of tracking by scent is very acute, the voice deep and baying, and the disposition gentle and affectionate. The first specimen is the champion female English Bloodhound, 'Chatley Brilliant' (K.C.S.B.,

No. 236B.), who was born in July, 1898, and died June 6th, 1903, her sire being 'Chatley Bellman,' and her dam 'Chatley Chantress'; she was the winner of many first and championship prizes. The skin was presented by the breeder and owner, Mr. Oliphant, in 1903. To the same donor the Museum is indebted for 'Chatley Blazer,' own brother to 'Chatley Brilliant,' who died in November, 1905, and who was winner of the first prize at the Crystal Palace in 1903, as well as of other prizes.

Next comes the head of the male English Bloodhound Champion 'Babbo' (K.C.S.B., No. 96,472A), a Dog born in April, 1896. He died in October, 1901, after winning 22 first, 13 championship, and 18 special prizes, and was bred in England by Mr. Edwin Brough, the donor of the head. Another male English Bloodhound bred by Mr. E. Brough is also exhibited. This animal died in 1900, and the mounted skin was purchased in 1901. A fourth specimen from the same kennel is the skeleton of the male English Bloodhound 'Burgundy' (K.C.S.B., No. 30,568), who was born on February 27th, 1891, and died November 18th, 1893, his sire being Champion 'Beckford,' and his dam 'Bianca.' In his owner's opinion he was the best Bloodhound ever bred. The skeleton was presented by Mr. Brough in 1907. A second skeleton is that of the female English Bloodhound, Champion 'Bettina' (K.C.S.B., No. 364E), who was born in April, 1899, and died in March, 1902. She was the winner of many prizes, including 8 firsts, 4 specials, and 2 championships, and was bred in England by Mr. Brough, who presented the skeleton in 1902. There is also the skull of the female Champion Bloodhound 'Brocade' (K.C.S.B., No. 49,613), presented by Mr. Brough in 1902.

Hounds. Foxhounds are represented by a statuette of 'Marquis,' a champion prize-winner in the Pytchley Pack many years ago. This statuette was modelled by Miss A. M. Chaplin, and purchased in 1906. There is also a mounted specimen of an English Foxhound, purchased in 1907. Of the Harrier, or Hare-Hound, there is a male, presented by Mr. J. S. Gibbons (the breeder) in 1906; while the head of a male Beagle presented by Mr. Rowland Ward in 1902 represents that small breed. Of the somewhat larger Basset breed the Museum possesses Champion 'Wantage' (sire Champion 'Louis le Beau,' dam, 'Witch') who was born in 1898, and died in January, 1905, after winning 9 first prizes. This specimen was presented by Mrs. A. Lubbock (the breeder) in 1905.

Pointer. The Pointer, which is merely a breed of Hound trained to hunt game in a peculiar manner, is represented by the champion female 'Sea-Breeze,' who was born in July, 1896, and died in November, 1905, her sire being 'Brodict Castle Sandy,' and her dam 'Mermaid.' She was the winner of the championship and challenge-bowl at Birmingham in 1898; of the championship and gold medal at Edinburgh in 1899; and of the championship at Birmingham in 1901. The specimen was presented by the breeder and owner, Mr. W. Arkwright, in 1905.

Griffon Hound. This is a heavily-built breed of white Hound little known in this country, and represented in the collection by a head and skull from La Vendée, France, presented by Mr. F. Adcock in 1885.

Great Danes and Mastiffs. German Boar-Hounds, or Great Danes, are represented, firstly by the champion 'Viking of Redgrave' (K.C.S.B., No. 1279F), the winner of many prizes, who was born in March, 1899, and died in March, 1902. This fine Dog, of which both skin and skeleton are shown, was bred and presented by Mrs. H. L. Horsfall. Of the Great Dane 'Duke,' the mounted head and skeleton are shown. 'Duke' was the largest Dog of his kind in England of his time, standing 35½ inches at the shoulder and weighing 12 stone 6 lbs. He died 1901, his age being unknown. He was the winner of many prizes; and his last owner was Mr. C. F. Heritage. The specimen was purchased in 1901. The female of the Great Dane is represented by a specimen purchased in 1902. On account of its early date, considerable interest attaches to the head and skeleton of the Great Dane 'Jupiter,' presented by Mr. F. Adcock in 1885. Mention may likewise be made of the skull of the female Great Dane 'Ingrath of Seisdon' (K.C.S.B., No. 1424L). Her sire was 'Vanguard of Redgrave' and her dam 'Pandora of Locherbie.' She was born in July, 1905, and died in February, 1907. The skull was presented by the Hon. W. B. Wrottesley. Of English Mastiffs the collection includes the skin and skeleton of 'Tarquinius' (K.C.S.B., No. 1489D), who was born in March, 1897, and died June, 1902. He was bred by Mr. A. Barnes, and was the winner of second prizes at Cheltenham and Epping in 1899. This Dog was presented by Mr. W. K. Taunton in 1902. To the same gentleman the Museum owes the skeleton and head of the female Brindled Mastiff 'Kathleen of Riverside' (K.C.S.B., No. 1366A). This Dog, which was bred by Mr. Taunton in October, 1894, and died in March, 1902, was the winner of the Old

English Mastiff Club's forty-guinea challenge-cup at Birmingham in 1898 and 1900, and of many other prizes. A third example represents the old English Mastiff, this specimen having been presented by Mr. H. D. Kingdon in 1888. The Cuban Mastiff is represented by a couple of skulls presented by the Zoological Society many years ago. In this place reference may be made to a mounted skin of the 'Dogue de Bordeaux,' or French Bull-dog. This breed is represented by 'Turk' (fig. 21), who was born in September, 1897, and died in 1904, his owner being the Rev. C. Steele. He was son of 'Matador du Midi,' and grandson of 'Ture,' the former of which was imported into England and took first prize at the Westminster Aquarium in 1896. These dogs were formerly used for bear-baiting. 'Turk' was purchased in 1904.

Bull-dogs. Since bull-baiting was in vogue in 1209, Bull-dogs must have existed at that time; and a document dated 1631 indicates that Bull-dogs were then recognised as distinct from Mastiffs. Old pictures show, however, that the original Bull-dog was a more Mastiff-like animal than the modern breed, and this is confirmed by the skulls in the collection. Still it always had an under-hung mouth (that is, with the lower jaw projecting in advance of the upper), an enormous gape, short, bowed front-legs, and a broad chest, such features being essential in a Dog which, unlike Wolves and Wolf-like Dogs, attacks from the front, and attempts to seize its antagonist by the muzzle. The under-hung jaws secure a hold at once, and the low body prevents goring by the horns of the bull.

Other characteristics are the short and wide skull, the small loins and hind-limbs, and the strength of the fore-quarters. These features are exaggerated in the modern breed, which is useless for fighting. The skull, for instance (as shown by the specimens in the table-case), is so broad and under-hung as to be a monstrosity, while the outward bending of the fore-legs is excessive. The old Bull-dog was a surly and pugnacious animal, whereas the modern breed is docile and gentle. The modern Bull-dog is well represented by 'Lucy Stone,' bred by Mr. W. F. Jefferies in 1900. She died in January, 1903, and, owing to her youth, was only shown three times, when she won 4 first and 5 special prizes. The skin and skeleton are both shown, and were presented by Mr. Jefferies in 1903. There is also the skeleton of a male brindled Bull-dog, presented by Mr. A. L. Sewell in 1902. The collection likewise includes the skull of the male Bull-dog 'Neotsfield,' who was born on April 23rd, 1905, and died on April 4th, 1906; his sire being 'Master Merlin,' and his dam 'Flora

FIG. 21.



FRENCH BULL-DOG, 'TURK.'

FIG. 22.



TIBET DOG.

From a drawing by Mr. FROHAWK published in the *Field* newspaper.

To face p. 40.



FIG. 23.—SIDE VIEW OF THE SKULL OF THE OLD ENGLISH BULL-DOG OR (?) BULL-TERRIER.
(From the Zoological Society's *Proceedings* for 1868.)

Venn.' Although only 11 months old at the time of his death 'Neotsfield' had won several prizes, and was valued at £100. The skull was presented by Mr. H. Wormsley (the breeder and owner) in 1907. Another example of the modern breed is the skull of the female Bull-dog 'Tomsh,' a first prize-winner in 1891 and 1893. This specimen was presented by Mr. J. W. Rose in 1901. As a contrast to the above, the visitor should inspect two reputed skulls of the Old English Bull-dog, which, as already mentioned, was much more like a Mastiff than is the modern breed. One of these specimens (fig. 23) was presented by Mr. E. Gerrard before 1860, while the second was also in the collection at the date mentioned. It is, however, uncertain whether these skulls may not belong to Bull-Terriers (see page 43).

Pug-dogs.

The Pug, which is believed to take its name from the Latin *pugnus*, a fist (in allusion to its short and square face), is evidently related to the Mastiff and the Bull-dog, although the history of its descent is lost. It is believed, however, to have been originally produced in Holland, at a comparatively recent date. At any rate it was fashionable in that country in the time of King William III., by whom numerous specimens were brought to England, where the breed has ever since been popular. The Pug appears to have been always a fawn-coloured dog with a black face and curly tail; but about the middle of the nineteenth century two distinct strains—the Willoughby and the Morrison—were established. The former was characterised by the cold stone-fawn colour, and the excess of black, which showed itself in the completely or nearly black head and in the presence of a large 'saddle-mark' or wide 'traces.' The Morrison strain, on the other hand, had a richer and yellower fawn, with no extra blackness. The two strains are, however, now more or less completely blended. There is also a black breed, of very modern origin. Owing to the shortness of the jaws, the teeth of the Pug are crowded together, so much so that the premolar teeth frequently have their longer diameter placed transversely instead of longitudinally. A similar feature often occurs in the skulls of Pekinese and Japanese Spaniels and other Lap-dogs (fig. 20). The breed is represented by a specimen purchased in 1908.

St. Bernard and Tibet Dogs.

The St. Bernard and the Tibet Dog appear to be the descendants of a very ancient breed dating from ancient Assyrian times, and represented by the 'Molossi' of classic Greece and Rome (fig. 19). In their long hair they are quite different from true Mastiffs. The St. Bernard is represented in the collection by 'The Deemster,' who

was born in July, 1897, and died in 1902. Bred by Mr. R. Allison, he was the winner of a twenty-five guinea challenge-cup, two silver shields, and other prizes. The skin and skeleton were presented by Mr. H. B. Snary in 1902. Two skulls of the St. Bernard Dog are also shown, one of them having been purchased in 1845, while the other was presented by the Hon. Walter Rothschild in 1902. The true Tibet Dog (fig. 22) is represented by a skull presented by Mr. B. H. Hodgson in 1848. There is also the skeleton of a Dog from Tibet presented by the Zoological Society in 1907, but this is not apparently a specimen of the typical breed.

Bull-Terrier. The white colour now characteristic of this breed is a modern feature, the older strains being brindled, white-and-fawn, or even black-and-tan. Bred for fighting or for rat-killing, the original Bull-Terrier appears to have been a cross between any ordinary Terrier and the Bull-dog, with, in some instances, a slight admixture of Mastiff blood. The Dogs which fought with lions in Wombwell's Menagerie at Warwick in the year 1825 were large Bull-Terriers, and not, as generally stated, Mastiffs; as were also the Dogs commonly employed in fighting in this country. The old-fashioned Bull-Terrier not only differed in colour from the modern breed but he was also a heavier and more powerful Dog. The pugnacious disposition is, however, retained by his modern white and lighter representative. The breed is represented in the collection by the head of a male, who was born in April, 1902, and died in November, 1905. This specimen was presented by Mr. Rowland Ward in 1906.

Terriers. In this group two specimens of the Black-and-Tan Toy breed, respectively known as 'Jem' and 'Gipsy,' are of interest on account of their early date. They both died in 1853, and were presented by Mr. J. Shakespeare in 1903. There is also the skeleton of a male Toy-Terrier of the same breed presented by the Countess of Cottenham in 1888.

With regard to the nature of the black-and-tan colouring met with in various breeds of Dogs, such as Terriers, King Charles Spaniels, and Setters, it has been pointed out that in all cases where this type obtains the black is restricted to the upper-parts and the outer sides of the limbs, while the tan occupies the under-parts, the inner sides of the limbs, and certain patches and spots on the face. The tan thus corresponds to the light areas, and the black to the dark ones in Dogs of other breeds. The explanation is therefore obvious, namely, that black-and-tan is the half-way stage to complete blackness or melanism.

The long-haired Skye-Terrier is represented in the collection by an unnamed specimen presented by Mr. C. L. Vandenhoff in 1907.

Of the Wire-Haired Fox-Terrier the collection includes the skin of Champion 'Donna Fortuna' (K.C.S.B., No. 869B), whose sire was Champion 'Dominie,' and her dam Champion 'Dame Fortune'; she was born on July 15th, 1896, and died June 5th, 1905, and was winner at all shows at which she was exhibited. The specimen was presented by Mr. F. Redmond, the breeder and owner, in 1905. There is also another Fox-Terrier, which died in March, 1905, and was presented by Mrs. Whitbread. The Smooth Fox-Terrier breed is represented by the skull of 'Apology,' a male, presented by Mr. Percy Morton in 1902.

Of the Aberdeen Terrier there is a mounted specimen, presented 1900; while the Griffon Dog is represented by 'La Reve des Griffons,' presented by Mr. G. F. Hobday in 1902.

The white Maltese Lap-dog is represented firstly by a specimen bred in England and purchased in 1901. Secondly, by 'Dorothy,' a female which died in 1902, and was presented by Mrs. E. Palmer in the same year. Of the Russian Lap-dog there is an immature male purchased in 1861; while the Mexican Lap-dog is represented by an immature specimen purchased at Liverpool, 1843, which was for many years exhibited in the Museum at Bloomsbury.

Poodles. The Poodle, which exhibits great variation in size, ranging from a weight of 10 lbs. to as much as 80 lbs., is a Continental breed of great antiquity. It appears, for instance, on bas-reliefs dating from about 30 A.D., at which early date its coat was partially clipped after the modern fashion; while it was painted by Bernadino Pinturicchio about 1490, and described by Conrad Gesner in 1555. Poodles display considerable variation in the character of the hair, which may be either comparatively short and curly, or 'corded,' so as to hang in long ringlets. It is stated, however, that considerable modification in this respect may be effected by the mode of dressing. Black, white, red, and silver-grey or blue strains of Poodle are recognised in this country; in addition to which there is the large brown Russian breed. Poodles, which are used in France as sporting dogs, are remarkable for their intelligence and cleverness. This breed is represented by 'Silver Lady,' who was born in February, 1901, and died in February, 1907, her sire being 'London Pride,' and her dam 'Grisette Grise.' The specimen was presented by the breeder and owner, Miss C. M.

Faithfull, in 1907. The collection also includes the skeleton of a German Poodle, presented by Mrs. Hansler in 1888.

Domesticated Cats.

Domesticated breeds of Cats have probably originated from several wild species of the genus *Felis*. The striped variety of the European Domesticated Cat is, for instance, probably derived either from the Egyptian Wild Cat (*F. ocreata*), which is known to have been tamed by the ancient Egyptians, or from the European Wild Cat (*F. catus* or *sylvestris*), or from both together. Before the introduction of the Persian strain, the striped variety of European Domesticated Cat agreed very closely with the Egyptian Cat, and in Egypt many are stated to be extremely like the latter. As to the origin of the true 'tabby,' or blotched variety of Domesticated Cat (fig. 24), there is some difficulty in arriving at a satisfactory conclusion, although it has been regarded as a distinct species, to which the name *F. catus* properly belongs. In the Manx breeds, which may be either of the striped or the blotched type, the tail is reduced to a stump, or wanting. In India, where many domesticated breeds are spotted, the Egyptian Wild Cat has probably been the parent stock. A series of skins of the blotched and the striped varieties is shown.

Tortoiseshell Cats are almost invariably females, the male of this breed being sandy. The blue Carthusian Cat is a long-haired breed of a uniform greyish blue colour, with the exception of the lips and soles, which are black. The Persian or Angora breed has also long silky hair and a bushy tail; it is of large size, and the colour is frequently uniform, varying from white to yellowish or greyish, with the lips and soles flesh-coloured, and in some instances one eye yellow and the other blue. There are, however, striped, and also blotched Persians, which suggest that the breed has the same origin as the short-haired Domesticated Cats of Europe. It is, however, possible that the Bokharan Steppe-Cat (*F. caudata*), an ally of the Egyptian Wild Cat, may have had something to do with the origin of the Persian and Indian breeds. The Abyssinian Domesticated Cat seems to be a rufous phase derived from the Egyptian Wild Cat. Malay Cats have the tail short and kinked; while the Mombas Cat of E. Africa is distinguished by its stiff, wiry hair. In the Paraguay Cat the size is small, the form weasel-like, and the hair close, short, and scant, these features being suggestive of affinity with the wild *F. eyra* of South America.

The Siamese breed is short-haired, with the body fawn-coloured,

and the head, limbs, and tail dark brown; the eyes are blue, and there are two bald spots on the forehead. New-born kittens are white. It is probably also a derivative from the Egyptian Wild Cat, with which it agrees in skull-structure.

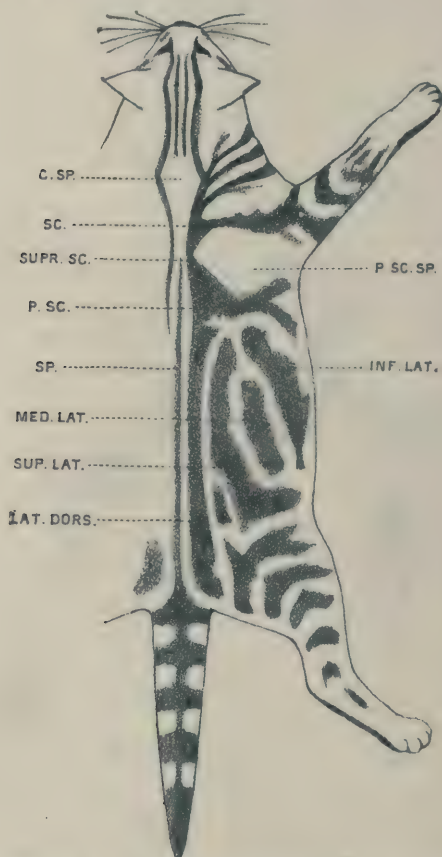


FIG. 24. --DIAGRAM OF THE COLOUR-PATTERN OF THE BLOTCHED OR TYPICAL TABBY CAT.

c. sp. cervical, or neck, space; *p. sc. sp.* postscapular space; *sc.* scapular, or shoulder, stripe; *supr. sc.* suprascapular stripe; *p. sc.* postscapular stripe; *sp.* spinal, or dorsal, stripe; *lat. dor.* lateral dorsal stripe; *sup. lat.* upper lateral, or side, stripe; *med. lat.* middle side stripe; *inf. lat.* lower side stripe. (From R. I. Pocock, in the Zoological Society's *Proceedings*, 1907.)

The most interesting specimen in the collection is the Chinchilla Persian 'Silver Lambkin,' which was the father of the Chinchilla breed, and the most noted stud-cat of its time. This Cat was born

in 1889, and died on November 5th, 1906, its sire being 'Perso,' and its dam 'Beauty.' It was bred by Miss M. Gresham (Mrs. E. T. Bridgewater), and presented by Mrs. D. B. Balding in 1907. The Smoke Persian breed is represented by the skin and skeleton of a male, bred by Miss Power in 1898, which died in 1900. The specimens were presented by Mr. W. F. Heath. The brown Tabby Persian Cat is represented by a male specimen presented by Sergeant S. Ingram in 1902; while the Blue Persian breed is shown by 'Forget-Me-Not,' a cat formerly belonging to Mrs. Herring, by whom it was presented on its death in 1903. Of the Manx Cat the collection includes a specimen from the Isle of Man, presented by Mr. G. C. Bacon in 1903; and there is also a Tailless Cat from Cornwall, presented by Mr. C. L. Hart Smith in 1903; and the skeleton of a third, presented by Mrs. Collins in 1902. The Siamese Cat is represented by an immature specimen bred in England, and presented by Mr. J. Harrington in 1902; while of the Indian Domesticated Cat there is an example purchased in 1903. Mention may also be made of the skeleton of the fore-limbs of a Many-toed, or Polydactyle Cat, having in one limb the normal first toe double and in the other triple. This interesting specimen was presented by Mr. P. E. Rumbelow in 1905.

Ferrets. The Ferret (*Putorius furo*) is a domesticated and generally albino derivative of the Wild Polecat (*Putorius fatidus*, or *P. putorius*); and is represented by a specimen presented by Mr. W. Mayes in 1900. Brown Ferrets, or so-called Polecat-Ferrets, are generally, if not invariably, hybrids between the Ferret and the Polecat. Two examples of the Wild Polecat from Aberystwyth, N. Wales, presented by Mr. W. Ruskin Butterfield in 1902, are exhibited in the case to show the parent-form of the Ferret.

Guinea-Pigs. The Domesticated Guinea-Pig is believed to be descended from the wild Aperea (*Cavia cutleri*) of Peru, which was tamed by the ancient Incas. In the case is exhibited a specimen of the uniformly coloured phase resembling the wild race; another of the variegated phase; and a third of the rough-haired breed, originally Japanese. All three were bred in England, and presented by the Zoological Society in 1901. Two other specimens, a grey and white and an orange and white, are exhibited in order to illustrate the 'disassociation' of the two colour-elements in the original brownish grey of the wild race. In the one case we have black (mingled with white to form grey), and in the other orange.

Rabbits. All the domesticated breeds of Rabbit appear to be derived from the Wild Rabbit (*Lepus* [*Orycterolagus*] *cuniculus*) of which a normally-coloured and a black specimen are exhibited. Examples of the English Black-and-white, the Silver-grey, the Silver-brown, the Blue-imperial, the Blue-and-tan, the Dutch, the Himalayan, and the Polish breed are shown, several of which were presented by Inspector A. Brazier of the Metropolitan Police. The names Dutch, Polish, and Himalayan do not indicate the native countries of the breeds to which they are applied. Largest of all is the so-called Belgian Rabbit or Hare, at one time supposed to be a hybrid between the Rabbit and the Hare. A specimen presented by Mr. A. Crichton in 1901 is shown. The breed is related to the still larger Flemish Giant Rabbit, of which there is an example, presented by Inspector Brazier in 1901. A sandy Lop-eared Rabbit, presented by Mr. B. A. Micklewright in 1901, represents the breeds in which one or both ears are pendent. Very distinct is the long-haired Angora Rabbit, a native of the country from which it takes its name, and represented in the collection by a specimen presented by Inspector Brazier in 1901. Among other specimens of a similar nature, reference may be made to the skull of a Belgian Rabbit with the incisors abnormally long, owing to a diet of meal. This specimen was presented by Mr. W. Larcombe in 1900.

Rats and Mice. Of both Rats and Mice semi-domesticated, and in most instances partially albinistic, breeds are kept in this country. There is some uncertainty whether Domesticated Rats belong to the Brown (*Mus norvegicus*) or to the Black species (*Mus rattus*). Specimens of Pied Rats presented by the Hon. Charles Rothschild in 1901 are exhibited. Of the Mouse (*Mus musculus*) a series of domesticated varieties was presented in 1901 by Sir William Ingram. This series displays a gradation in respect of colour from the dark wild race to complete albinism. In the fawn-coloured phase the eyes are often claret-colour, and in one of the white specimens they are black, although red in the second. The pied specimens exhibit a different type of colouring.

Pigeons. In one of the cases in the Central Hall is exhibited a representative series of breeds of Domesticated Pigeons, all of which appear to be descended from the Wild Rock-Pigeon, or 'Blue Rock' (*Columba livia*), of which specimens from the Ross-shire coast are also shown. The specimens of Domesticated Pigeons, which have been presented to the Museum by a number of donors, include the following breeds: Red Pied Pouter, Blue Pigmy Pouter,

Semi-blue and Black Pied Pigmy Pouter, Blue Runt, Russian Trumpeter, Carrier, Pied Carrier, Yellow Dragon, Black Pied Scanderoon, Red-chequered Short-faced Antwerp, Short-faced Antwerp, Archangel, White Fantail, Silver Owl, Satinette, Barb, Silver Blondinette, Blue-barred Blondinette, Blue-laced Blondinette, Peaked Blondinette, Sandy Frill-back, Blue Frill-back, Starling, Suabian, Nun, Black Swallow, Magpie, Almond-Tumbler, Short-faced Almond Tumbler (skeleton), White Jacobin, Spangled Siberian Ice, Short-faced Blue-Beard, Black Short-faced Ancient, Homer or Voyageur, and Modena. There is also a pair of the Ground-Tumbler or Lotan breed from India.

Poultry.

The wild Red Jungle-Fowl (*Gallus ferrugineus*), which is common in Northern India, and ranges eastward to Siam, Cochin China and the Malay countries, is supposed to be the parent stock of all the domesticated breeds of Fowls. It is represented by specimens from Sikhim, presented by Mr. A. O. Hume in 1885, which, like most of the following examples, are exhibited in a case in the Central Hall. In the same case the Wild Ceylon Jungle-Fowl (*Gallus lafayetti*) is represented by a cock and hen from Ceylon, purchased in 1905. This species is nearly allied to the Red Jungle-Fowl, but there is no definite evidence that it is the ancestor of any of the domesticated breeds; although recent experiments indicate the possibility that it may be connected with some of them. Considerable interest attaches to a group of Fowls shot in the woods on Taviuni, one of the Fiji Islands. The birds are the descendants of Domesticated Fowls left by the early voyagers more than a century ago. They have now reverted to the wild state, and assumed more or less of the characters of the Indian Jungle-Fowl. These specimens were presented by Mr. E. L. Layard in 1876. Nearly allied to the Wild Jungle-Fowl are Game-Fowls, of which an Old English Gamecock, with the comb, wings, and tail trimmed for fighting, and artificial spurs on the legs, is exhibited. This bird was trimmed more than forty years ago by an expert, and was purchased in 1905.

Coloured Dorkings are represented by a cock and hen presented by the Hon. Florence Amherst in 1904, and by a second pair presented by Messrs. John Baily and Sons in the same year. Of the Buff Cochin breed a pair is exhibited of which the cock was the winner of fifty, and the hen of more than forty prizes. They were presented by Mr. G. H. Proctor in 1900. The curious White Silky breed is represented by a cock and hen from France,

purchased in 1905. In these fowls the plumage has assumed a soft and silky character, with the loss of the stiff wing and tail feathers. A still more remarkable modification is presented by the Tail-less breeds, of which a cock and hen are exhibited. In these breeds not only the tail-feathers, but even the bones of the tail are absent. There are various breeds of Tail-less Fowls differing in size and colour. The birds exhibited are from Holland, and were presented by Mr. A. J. Bicker Caarten in 1895.

Another remarkable deviation from the normal condition is displayed in the tails of a peculiar breed of Fowls from Japan. The true tail-feathers of the cocks, but more especially the tail-coverts, are increased in number, and elongated to an extraordinary degree; a single feather in one of the specimens exhibited measuring upwards of nine feet in length. According, however, to descriptions and figures published in Japan, tails of nearly twice this length are known. The great difficulty in keeping these birds arises from the precautions necessary to prevent their tails being injured. They are accordingly confined in high narrow cages, without room to turn, and only allowed exercise for a short time daily on a perfectly clean floor. The hens of the same breed are but slightly modified in the same direction. Two of the specimens exhibited were presented by the Tokio Museum in 1887, and the third by Mr. F. D. Parker in 1888.

Ducks and Geese.

Domesticated Ducks are probably all derived from the Wild Duck or Mallard (*Anas boschas*), of which specimens are exhibited in one of the cases in the Central Hall. One of the most remarkable domesticated breeds is represented by the so-called Penguin-Ducks, which are natives of Java and some of the neighbouring islands. They differ so remarkably from all other breeds that it has been suggested that their origin is also different; but Darwin was of opinion that, like other breeds, they trace their descent to the Wild Duck, their special peculiarities being in some degree the result of an unnatural climate. Penguin-Ducks take their name from the nearly erect carriage of the neck and body, which are unusually thin. The wings are short, the tail is turned up, and the bones of the leg are relatively longer than in the Wild Duck. Usually, at any rate, there are only 18 tail-feathers, in place of the 20 of the Wild Duck; and there are also fewer scales on the toes than in the latter. There is considerable variation in the colour of the plumage; and the presence of a crest on the head is not a constant feature of the breed. The specimens exhibited came from Buitenzorg, Java, and were presented by Dr. M. Treub in 1906. The only other breed at present represented in the

collection is the Cayuga, or American Large Black Duck, of North America, of which a specimen presented by Major H. Fothergill in 1901 is shown. The only specimen of Geese at present exhibited is of the Chinese Domesticated Goose, presented by Mr. H. Greenway.

Canaries. The origin of most domesticated animals is more or less completely lost in antiquity, and few additions have been made to the list since the commencement of the Historic Period. One of the most recent is the Canary Bird (*Serinus canarius*), first imported in the early part of the sixteenth century into Europe, when it soon became completely domesticated and has in consequence undergone great modifications. It was originally a native of the Canary Islands, Madeira, and the Azores. The tame birds exhibited are typical examples (being nearly all prize-winners at shows) of the best marked breeds at present cultivated in this country. Many were presented through the good offices of Mr. W. H. Betts, Honorary Secretary of the Cage-Bird Club. The series includes a pair of Wild Canaries and their nest, from Madeira; while the following breeds are also represented. The Norwich, by a bird which was the winner of eighteen prizes between 1890 and 1893, and was presented by Mr. E. J. Philpot in 1894. The Yellow Cinnamon Norwich, by a specimen which took the first prize at the London Cage-Bird Association Show in 1894, and was presented by the Rev. W. K. Stuart in 1894. The Yellow Norwich, by a specimen presented by Messrs. Mackley Brothers in 1897, the donors of the next three specimens. The clear Yellow Norwich Plainhead, by a first prize winner. The evenly marked Buff Norwich. The unevenly marked Buff Norwich Plainhead, by a first prize winner. The dark-crested variegated Buff Norwich, by a specimen presented by Mr. George Crabb in 1894. The Crested-bred Norwich, by a great prize-winner, presented by Dr. W. J. Greene in 1897. The Yorkshire Variegated Buff, by an example presented by Mr. E. P. S. Elfick in 1894. The Yorkshire, by an example of the prize-breed, presented by Mrs. Lowe in 1904. The Lancashire Yellow Coppy, by a specimen presented by Mr. F. J. Green in 1894. The Lancashire Plainhead Buff, by a bird which took the first prize at Rochdale in 1883, and was presented by Mr. G. R. Kennerley in 1894. The golden-spangled clear-cap Lizard, by a cayenne-fed bird, presented by Mr. J. Naden in 1895. The clear Buff Crested, by an example presented by Dr. W. T. Greene in 1894, and by a bird which took the first prize at the Royal Aquarium in 1894, and was presented by Mr. F. S. Weinberg in the same year.

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